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# COIN-OP THREAT

## Future arcade hits may never appear on computer - page 2

## Company defies new anti-piracy law – page 3 • How the law affects you – page 14

## Have you seen this man?

page 8

## NEW ZEALAND STORY

Ocean's blockbuster kicks off new games section page 40

## HE'S AFTER YOUR DATA

...but you can beat him page 16

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# COMPUTER COIN-OP THREAT

## Software houses fear Nintendo power

**Fears are growing among UK software bosses that big name coin-op conversions could virtually disappear from home computers within two years – because of the growing power of Japanese console giant Nintendo.**

The multi-billion-dollar toy manufacturer is believed to be looking for exclusive rights to both console and computer versions of the most popular arcade games. Then it will have full say over what machines the games appear on.

Industry bosses fear the firm will deliberately avoid releasing the games on any formats other than the Nintendo Entertainment System. If so, gamers hoping to enjoy major arcade games in their own homes will have to buy the Nintendo console.

When tying up deals with coin-op manufacturers Nintendo has long insisted that the games do not appear on any other console. Now, say sources, the firm is trying to extend that clause to cover all personal computers.

Nintendo can afford to guarantee coin-op manufacturers millions of pounds in sales because of its massive presence in the United States and Japan. It is feared the coin-op companies will be sorely tempted to sacrifice smaller markets in favour of massive profits from Nintendo cartridge sales alone.

"If you're a coin-op manufacturer you'll have a choice between selling 400,000 cartridges in the US alone or making a few pence on each home computer version. There's millions to be made from Nintendo software," said one high ranking coin-op licensee.

However, not even Nintendo can be certain of success. Legal experts say the firm will have to be careful not to overstep American or European fair trading laws. Potentially, it will have to face legal action from hardware manufacturers that feel Nintendo's deals are blocking sales of their computers unfairly.

Britain's top software bosses were last week complaining privately to *Express* that they are feeling the pinch already. One prominent publisher claimed to have chased three popular licences only to be foiled by a special Nintendo deal.

The Japanese firm is not advertising its plans. A spokesman in Washington would neither confirm nor deny that Nintendo is attempting to draft in these extra clauses. He would only say: "Negotiations are all done on an individual basis."

Software house bosses here in the UK were using terms such as "unsavoury" and "worrying" last week. All fear the chase for coin-ops will become tighter. But, they point out, some arcade firms will not deal with Nintendo.

Sega, because of its own console interests, will not even be approached. And Tengen, Atari's sister coin op company, is currently embroiled in a multi million dollar lawsuit with Nintendo.

Much of the home computer trade in the UK regards this matter as too sensitive to talk about publicly. However, all are clearly afraid of the power of Nintendo. Coin-op conversions have consistently been the best selling computer games, especially during the peak selling run up to Christmas. Last December the charts were dominated by Ocean's *Operation Wolf* licensed from coin-op producer Taito. Christmas next year could be a very different story.■

• Nintendo: Runaway US console leader

• Arcade action: But bringing it home could cause problems

• Operation Wolf: The kind of sales software bosses dream about – and fear they may never see again

## The rise and rise of Nintendo

Nintendo's astonishing success first in Japan and then America has rocketed it into a position where it dwarfs all other electronic games companies.

The US statistics are remarkable. Between autumn 1986 and the end of last year the Nintendo system was bought by 24.5 million Americans – giving the company an 80 per cent share of the US home video game market. For two years running it's been the top-selling 'toy' at Christmas and it is predicted that by the end of this year one in five American households will have a Nintendo.

The size of this market has meant remarkable software sales. *Super Mario Bros* sold 9.1 million copies in the US, that's around *thirty* times more than a computer game has ever achieved in Britain.

More than one million Americans subscribe to (and pay for) the magazine *Nintendo Power* – naturally it too is owned by Nintendo. Indeed, the console plays such a big part in the lives of American youngsters that department stores have set up special Nintendo centres where you can buy software, add-ons, sweat-shirts, numerous derivative toys – and even Nintendo breakfast cereal.

All this is despite the fact that the Nintendo's 8-bit technology is over five years old – in game-playing power the machine is roughly equivalent to an Amstrad CPC.

So far, the console has failed to take off in the UK. However, Serif, a major toy company has recently signed a distribution deal with Nintendo and is planning a heavyweight marketing campaign including TV advertising. It still lags well behind its Sega rival here.

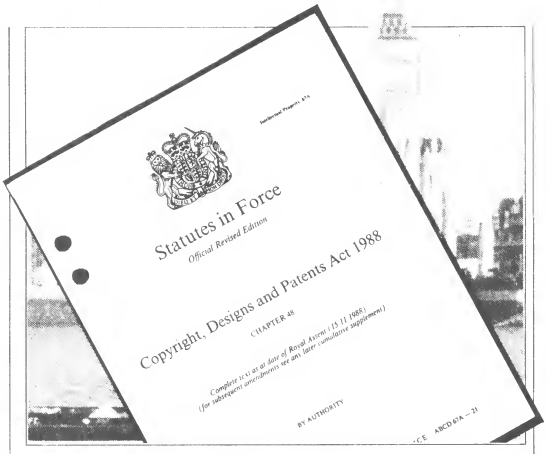
• Nintendo: A way of life for American youngsters

# POWER TURNS DEAF EAR TO COPIER BAN

**Blitz, the powerful copying device for the ST, has not been taken off the market despite the new Copyright law which came into effect this week.**

Manufacturer Power Computing says it is prepared to carry on selling its copier despite the introduction of a law which sets out to ban such devices.

As uncovered in *Express* (issue 37) there are a number of loopholes which the manufacturers can slip through. Even though Blitz can be used for piracy it is also capable of perfectly legitimate applications such as backing up expensive software. Power can sell it if it does not mention its illegal capabilities.




• The letter of the law: But Power says it's immune

"We've been talking to our lawyers for the past couple of weeks and decided to carry on selling Blitz," commented the firm's Ken Browning. "I don't think that part of the law covers our device," he said.

Browning claims that any legal action from a publisher which says its product has been pirated using the Blitz is unlikely to be brought let alone succeed.

Other manufacturers were not so sure. Datel (Action Replay), Evesham Micros (Mass Duplicator) and Trilogic (Expert) are all taking their gadgets off the market for fear of legal reprisals.

However, all are prepared to bring them back. Evesham and Trilogic are waiting to see how Power gets on and will begin selling their copiers again if that firm fares well.

Anti piracy body FAST has admitted that it would be difficult to bring legal action against these companies and says it will not be doing so in the near future. ■

• *The Copyright Law is fully analysed on page 14*

## A pirated piracy device?

**Allegations were flying around last week that a so called "piracy device" sold by Evesham Micros is in fact a pirated copy of a rival copying program.**

**Power Computing markets the Blitz copying gadget and is understood to be talking to its lawyers concerning Evesham's Mass Duplicator. Power privately feels that the Duplicator is a rip off of the extraordinary Blitz copier.**

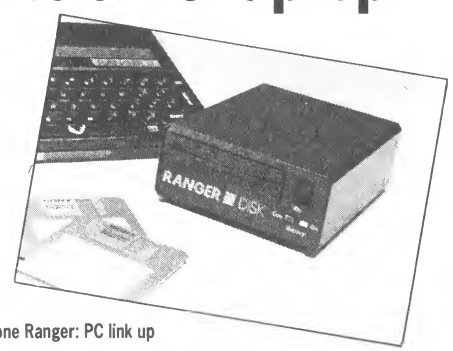
**Because of legal restrictions Power is refusing to talk about this matter. The firm's Ken Browning would neither confirm nor deny that talks were going on with legal people although insiders insist the company's top brass and the copier's programmer are extremely annoyed.**

**For Evesham, Richard Austin said that he had not yet been contacted by Power or its lawyers on the matter and categorically denied that his Duplicator is a rip off of Blitz.**

**The irony of this case will not be lost on those people who oppose copying devices saying they encourage piracy.**

**It seems extraordinary that a firm should be talking to lawyers about the protection of a product which could itself be illegal.**

## Turn your Z88 into a PC laptop




• Lone Ranger: PC link up

**Fast moving Z88 owners can now use standard PC data disks on the lightweight laptop.**

Ranger Computers has just launched its battery operated Rangerdisk 3.5 inch drive which allows Z88 owners to use 720K floppies as a storage medium and for exchanging files with their PC.

So missives, memos and documents can be typed on the move and then transferred to the PC in the office or at home. Also, documents typed on the PC can be modified on the laptop.

The only drawback is the price. At £450 it costs more than twice as much as the Z88 itself and as much as a cheap portable PC. More on 0604 791064. ■

## PCs go to pot!

**Do you know your Strelitzia Regina from your Chaemadoria Elegans? And would you know a Primula Obconica if you saw one?**

**It's all a load of horse manure to most people but to Britain's gardeners it's the stuff hot afternoons are made of. As such a new 8,000 plant PC database has been put together detailing the most suitable plants for gardeners needs.**

**Plantfinder was specially written by Bristol programmer Frank Hope for the TV show *Gardening Time* but it should be sold at an affordable price to home users by the end of this year.** ■

## United we stand...

**Closed season soccer spending is reaching fever pitch as software houses scramble to tie up the big names in football.**

• Golden days: Can Krisalis come up with a winner?

**Small publisher Krisalis, after lengthy negotiations, has pulled off something of a coup with the signing of the entire Manchester United team. A game of the same name should be appearing on all major formats by the end of this year.**

**Krisalis is putting together a strategy cum simulation affair which incorporates all major competitions. Manchester United is claimed to have more supporters worldwide than any other club.**

# CONTENTS

## FEATURES

**MUSIC MACHINE** 8
All the news from the British Music Fair

**COMPETITION** 10
Win a video player in our *Robocop* competition

**COPY RIGHTS** 14
The new Copyright Law analysed

**SAFE AND SOUND** 16
How safe is your data?

**A TO Z** 21
UVW

**PC PHOTOFIT** 24
How identikits are going computerised

## REGULARS

**COMMENT** 4

**LETTERS** 11

**EXPRESS SALES** 34
Pick up some great bargains here

**JOBS** 35
The best in computer vacancies

**READERS' CLASSIFIED** 36

**TECH TIPS** 37, 38
Your problem page

**GAMEPLAY** 40
The newest, hottest, most up-to-the-minute games pages around! Latest pokes and cheats, reviews, sneak previews, the gossip from the street – it's all here in the new *Express* leisure section

**VOUCHERS** 43, 44
Buy *Express* for 58p and save £10!

**LISTINGS** 54
Ten-line listings guaranteed not to work on your machine...

## YOUR MACHINE

**ST** 26
**Amiga** 27
**PC** 28
**CPC** 29
**Spectrum** 30
**C64, Archimedes** 31
**PCW, QL** 32
**BBC, MSX** 33

# COMMENT

### Death to the micro? No

**Dirty Harry would have said that opinions are like consoles: everybody's got one. Nintendo has steamrollered over home computing in America. Will the same thing happen here?**

**If consoles were to squeeze out computer based games to the same extent in Britain there would be a lot of marketing men and managers queueing up at the DSS office. But even if the licences to the money-spinning home coin op conversions all went entirely Nintendo's way, a wholesale move over to consoles like that in America would be unlikely.**

**Britain was arguably the first country in the world to have a home computer boom, and the average home user does a lot more on their micro than just play games. Despite the various supposed advantages of consoles, they still make up for a small percentage of the market. Most users, it seems, want to be able to use their machine actively – for programming, word processing, musical applications and so on – as well as passively, just playing games.**

**While Nintendo could stimulate the console market, it will never significantly dent the bias towards micros in the British market. The domestic software business is built on shifting sands, but the buildings are not about to founder yet.**

### Copy cats

**It's a confusing week for everyone. Those copying interfaces are now illegal and can't be sold any more. Or, er, can they?**

**One company is still selling them, confident that it can win any legal challenges that the software houses might bring against them. The others are waiting for the result of any test case. Meanwhile people are still arguing over the wording of the Copyright Act 1988 now in force.**

**The wording of the Act is so vague – it doesn't even define 'program' anywhere – that it has proved no real use. Is the law really so toothless when it comes to tackling the pirates? The answer so far is a resounding yes.**

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# WHAT A SCORCHER

**The recent wave of scorching summer weather had some computer operators sweating as machines crashed because of soaring temperatures.**

Those companies which had not taken the correct precautions could only stand helplessly by and stew as systems worth thousands of pounds crashed and went dead, holding up their business in the process.

Future Tech, a firm which specialises in fitting out and air conditioning computer rooms, says it spent much of the past two weeks "doing first aid jobs" on systems which had overheated.

"Companies are putting computers in rooms which weren't designed to hold them. The machines are all pretty robust but when you've got a room full of hot computers and wires any increase in temperature is going to take its toll,' said the firm's Peter Woodard.

"We're constantly being called in to re-arrange things or simply make the rooms cooler for a short while."

David Pleece at home computer repair outfit WTS Electronics, said companies with big mainframes were suffering from the heat.

However, he commented: "Home and small business computers are not having any such problems although if someone were stupid and left it running in an especially hot place they would be in trouble."

# Apple 'look and feel' lawsuit in jeopardy

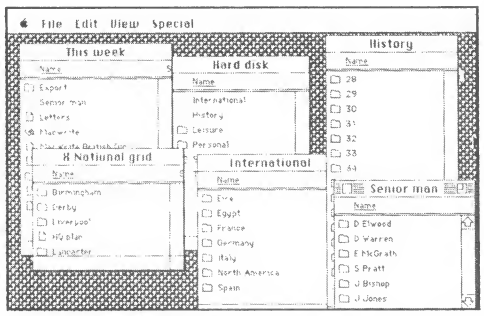
**Apple's attempts to crack down on alleged copying of the Macintosh's clever icon interface looked bleak at the end of last week.**

In San Francisco Judge William Schwarzer has refused to accept the firm's claim that its user friendly graphical front end had been ripped off by Microsoft and Hewlett Packard (*Express passim*). The case is one of the most important in computing history since it will establish a precedent in look and feel – the ability to make a program which has the same flavour as another.

Apple's lawsuit rests on allegations that Hewlett Packard's operating system and Microsoft Windows 2.03 is too similar to the Mac's user interface. That exploits simple to follow windows and is universally popular.

However, Schwarzer has said that an agreement between Apple and Microsoft in 1985 covers the issue. He is now contemplating whether Hewlett Packard's use of icon based windows for the PC is an infringement of Apple's copyrights.

It is generally accepted that the Mac's user interface is welcoming enough even for the hardiest technophobe. If Apple loses the rest of the case expect to see it popping up elsewhere.




• Mac attack: User friendly, but is the look and feel copyright?

# Aircraft safety database flies out

**Aging aircraft and terrible crashes such as the recent Sioux City disaster is causing increased concern about the safety of air travel.**

**A remarkable new software package has been written which is designed to keep abreast of the flying hours and repair schedules of the world's 9,500 commercial aircraft with more than 50 seats.**

**The database has been put together by Aviation Research and Support which hopes flight authorities will make full use of it. Its updated every month and users can find out whatever data they want on any major aircraft (such as how many landings since its last full checkup). A number of versions have been developed so it will run on anything from a mainframe to a PC compatible.**

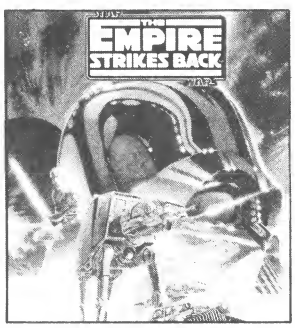
# Domark strikes back

**Domark's trio of *Star Wars* games are to be wrapped up together in a special compilation next month.**

*Star Wars: the Trilogy* will include the original game of two years ago as well as *The Empire Strikes Back* and last Christmas's *Return of the Jedi*.

It should be available on most formats at anything between £12 and £25. Domark says it isn't planning to squeeze all the games onto one disk or tape.

"These three games have sold about 400,000 throughout Europe put together," said Domark's' Dominic Wheatley. "It's going to be a marvellous compilation."




• May the fourth be with you: First three Star Wars games bundled

## SHOOT FROM THE LIP

**"Er, no, I can't comment on this on or off the record. And don't quote me on that."**
A usually fearsome software industry figure who, strangely enough, turned a bit wibbly at the mere mention of the word Nintendo

**"The gruesome loading and protection procedures adopted by games vendors are a right turn off for folk who only want to destroy the universe in the privacy of their own home and couldn't give a recursive procedure for the finer points of computing and BASIC."**
William Poel arguing for the console cartridge in trade mag *MicroScope*

**"When other people withdraw something no-one notices, but when Amstrad does it the whole bloody world collapses."**
Guess who's getting wound up about City whingers

**"Bomber – you'll finally believe your computer can fly."**
Activision's appalling slogan for its forthcoming game

# A computer Bible? It's God's truth

**The Good Book has become The Good Computer – a micro Bible has been put together in the US.**

**The handheld machine can locate any passage of the Oracle within seconds simply by pressing prompt words. For instance, if a user punches in "beginning, "word" and "God" the computer will find the exact wording of that passage: "In the beginning was the Word, and the Word was with God, and the Word was God." (John 1).**

**Americans can expect to see the machine – developed by Franklin Computer – this Christmas. British availability isn't yet known.**

# Skweek repents

• Mind your language: Skweek back to normal

**Confusion surrounding the mysterious transformation of game character Skweek from a lovable cutesy to a foul mouthed yob began to clear up last week.**

**The US Gold game had been taken off the shelves at WH Smiths after it was found that some copies contained foul language. Skweek communicates in the game using speech bubbles but in some versions the dear thing was uttering four letter words.**

**It was something of a mystery how such a thing could have happened but sources close to US Gold have revealed the explanation.**

**It seems the programmer on the Amiga version put the expletives in for a joke whilst writing the game with the intention of changing it later. However, the programmer forgot to remove the offending words and this version slipped out.**

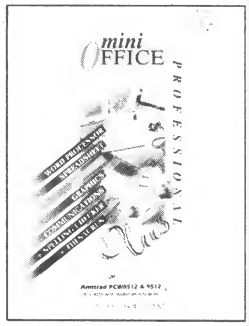
**US Gold has recalled the nasty versions and cleaned up Skweek's act – and WH Smiths is putting it back on the shelves.** ■

# Mini Office madness

**Nearly half a million computer owners have bought one of the *Mini Office* business programs – and to celebrate, the publisher Database is giving away a video recorder.**

This month two hundred special copies of *Mini Office* will be dispatched containing registration cards. Buyers should send the cards back in because one will be the 500,000th copy of the program – the purchaser will end up with a £500 Sony video recorder.

*Mini Office* was launched in 1984 for the Beeb at a low price (for business packs) of £5.95. It, and its successor *Mini Office 2*, has since been converted to the CPC, Electron, Speccy, C64, Atari XL, ST and PC.




• Office party: Prize for the 500,000th buyer

Database boasts: "It's undoubtedly the best selling small business package of all time." ■

# MEMORY CARD STANDARD SOUGHT BY BIG NAMES

**The world's leading manufacturers of memory cards are teaming up in an attempt to establish a global standard.**

Credit card sized memory storage devices are widely considered to be the future of computing. More and more products featuring card storage are coming out from Japan as well as the UK. Atari's Portfolio pocket PC as well as the forthcoming Poquet computer utilise this technology.

The consortium includes such notables as Lotus, WordStar and Toshiba. Here in the United Kingdom DIP – the developer of Atari's Portfolio – says it supports the move, even if it means the standard won't be the same as its computer.

The Japanese Electronics Industry and Development Association which includes Hitachi, Epson and Fujitsu is backing the 68 pin system which holds about 48 per cent of the world's market.

The Portfolio is a 32 pin machine and there are a multitude of other designs such as the 60 pin configuration. Most members of the unnamed group accept that it will not be easy to establish a standard.

Peter Baldwin at DIP told *Express*: "With so many products coming out which use these cards it's important that a standard is established. Market forces will win through.

• Opening up of the portfolio? Setting the pace, but not the standard

"The one which sells the most will become standard just as it does with any other computer item." ■

## SNIPPETS ● SNIPPETS ● SNIPPETS

***● Following her failure to even get MPs to debate the anti hacking bill Emma Nicholson has says she never even intended it to become law. She claims the intention was only to get people talking about the subject...***

***● A new program which can handle longwinded technical documentation, diagrams and equations is now available on the public domain. It's called Tex, costs a tenner, and is available from the South West Software Library, PO Box 562, Wimborne, Dorset, BH21 2YD...***

***● Massive business software outfit Borland is back on the right tracks. After last year's financial problems the firm has now come up with sales of $23 million. Borland is responsible for the likes of Paradox (a database) and the Turbo Pascal language...***

***● Gremlin has upped stumps and moved back to Sheffield following the buyout of the games firm by boss Ian Stewart. Previously, much of the company was owned by US Gold which is based in Birmingham.***

# Any old ion

• Your very good health? Mountain Breeze's new gadget

**A device has come out which claims to freshen up unhealthy computerised office environments.**

**Mountain Breeze's Computer Ioniser emits streams of negative ions (electrically charged particles) designed to combat the positive ions which build up around the monitor.**

**These ions are said to cause headaches, eyestrain, blurred vision and irritability. But, says Mountain Breeze, these ailments can be avoided with the £30 gadget. A breath of fresh air on 0695 21155.**

## TOP 20 *Full Price* GAMES

| | | | |
|---|---|---|---|
| 1 | **Robocop** OCEAN<br>*Spectrum, C64, CPC, ST, Amiga, Others* | 1 |
| 2 | **Dragon Ninja** OCEAN<br>*Spectrum, C64, CPC, ST, Amiga* | 3 |
| 3 | **Silkworm** VIRGIN<br>*Spec, C64, CPC, ST, Amiga* | 7 |
| 4 | **Forgotten Worlds** US GOLD<br>*Spectrum, C64, CPC, ST, Amiga, Others* | 4 |
| 5 | **Crazy Cars II** TITUS<br>*Spectrum, CPC, ST, Amiga* | 11 |
| 6 | **Run the Gauntlet** OCEAN<br>*Spectrum, C64, CPC, ST, Amiga* | 5 |
| 7 | **Kenny Dalglish** COGNITO<br>*Spectrum, C64, CPC, ST, Amiga* | 7 |
| 8 | **Operation Wolf** OCEAN<br>*Spectrum, C64, CPC, ST, Amiga* | 9 |
| 9 | **Red Heat** OCEAN<br>*Spectrum, C64, CPC, ST, Amiga* | 12 |
| 10 | **Emlyn Hughes** AUDIOGENIC<br>*Spectrum, C64, CPC* | 6 |
| 11 | **Jaws** SCREEN 7<br>*Spectrum, C64, CPC, ST, Amiga* | NE |
| 12 | **Middle Earth** MELBOURNE HOUSE<br>*Spectrum, C64, PC, ST, Amiga* | RE |
| 13 | **Renegade 3** IMAGINE<br>*Spectrum, C64, CPC* | 17 |
| 14 | **In Crowd** OCEAN<br>*Spectrum, C64, PC, ST, Amiga* | 14 |
| 15 | **New Zealand Story** OCEAN<br>*Spectrum, C64, CPC, ST, Amiga* | NE |
| 16 | **Football Manager 2** ADDICTIVE<br>*Spectrum, C64, CPC, ST, Amiga, Others* | 13 |
| 17 | **Out Run** SEGA-US GOLD<br>*Spectrum, C64, CPC, Others* | RE |
| 18 | **Populous** ELECTRONIC ARTS<br>*ST, Amiga* | 20 |
| 19 | **Licence to Kill** DOMARK<br>*Spectrum, C64, CPC, ST, Amiga* | NE |
| 20 | **Kick Off** ANCO<br>*C64, ST, Amiga, PC* | 10 |

## TOP TEN *Budget* GAMES

| | | |
|---|---|---|
| 1 | **Green Beret** HIT SQUAD<br>*Spec, C64, CPC, Others* | 1 |
| 2 | **Yie Ar Kung Fu** HIT SQUAD<br>*Spectrum, C64, CPC, Others* | 6 |
| 3 | **Daley Thompson** HIT SQUAD<br>*Spec, C64, CPC, Others* | 2 |
| 4 | **Enduro Racer** HIT SQUAD<br>*Spec, C64, CPC, ST, Others* | 4 |
| 5 | **Postman Pat** ALTERNATIVE<br>*Spectrum, C64, CPC* | RE |
| 6 | **Saboteur 2** ENCORE<br>*Spectrum, C64, CPC, ST, Others* | 6 |
| 7 | **Wolf Pack** BLUE RIBBON<br>*Spectrum, C64, CPC* | 5 |
| 8 | **Rambo** HIT SQUAD<br>*Spectrum, C64, CPC* | 14 |
| 9 | **Game Over** ALTERNATIVE<br>*Spectrum, C64, CPC, Others* | 10 |
| 10 | **Treasure Island** CODE MASTERS<br>*Spectrum, C64 CPC* | RE |

RE re-entry • NE new entry • Last week's positions

Compiled by Gallup

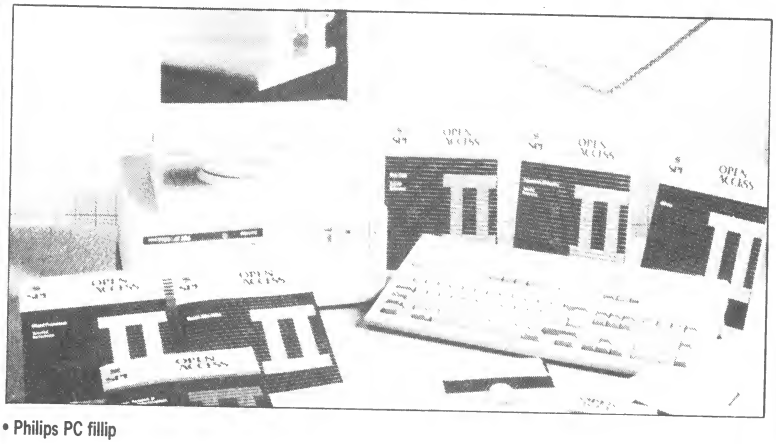
*The charts shown are based on the Open Market, that is, retailers who stock a broad range of products. All charts shown are copyright of Gallup.*

# IN AT THE CHEAP END

**Philips is pitching for the PC buyers pocket once again with a bargain offer on its low cost range.**

The firm which says it can topple Amstrad as Britain's number one PC manufacturer is bundling a £500 piece of software with its range of XT and AT PCs. *Open Access II* is published by SPI and features a database, spreadsheet, programming kit, word processor, communications module and various desk accessories.

The entry level price of this is £799 for the XT with 12 inch mono monitor and 20Mb hard disk. At the top of the range is the NMS 9126 which weighs in at £1699. That's an AT with dual floppies, 14 inch monitor and 20Mg hard disk.



• Philips PC fillip

Buyers are also being offered half price training courses as an added inducement. They get cheap places on an *Open Access II* course with two days costing £150.

Philips is pitching its offer as the ideal opportunity for first time users of PCs to get into serious computing at moderate expense. For further info call 01 222 0833.

# Virus meet

Virus basher Alan Solomon is organising two more seminars on his favourite subject.

Due to be held on September 13th and November 16th at Watersmeet in Rickmansworth he hopes to look at various case studies, demonstrate well known viruses and talk about the machinations of the PC which allow viruses to spread. More on 0494 791100.

• It's spreading: Solomon talks viruses

# Einstein a go go

The Tatung Einstein isn't dead.

This week sees the launch of two new games for the machine: *Jump Mania*, a *Manic Miner* lookalike, and *Sprog*, a 128 screen arcade adventure. They cost £14 and £15 respectively. More from publisher Taurus on 0473 602460.

# Word Up

Amiga word crunchers can now get hold of a stand-alone thesaurus for their machine.

*K-Roget* from Kuma contains more than 150,000 words and phrases as well as a spelling checker. It costs £29.95. Kuma is on 07357 4335.


# H T COMPUTERS

**COMMODORE PC's**

| | |
|---|---|
| PC1 MONO | £300 |
| PC1 COLOUR | £400 |
| PC10 III SD MD | £499 |
| PC10 III SD CD | £655 |
| PC10 III SD EGA | £799 |
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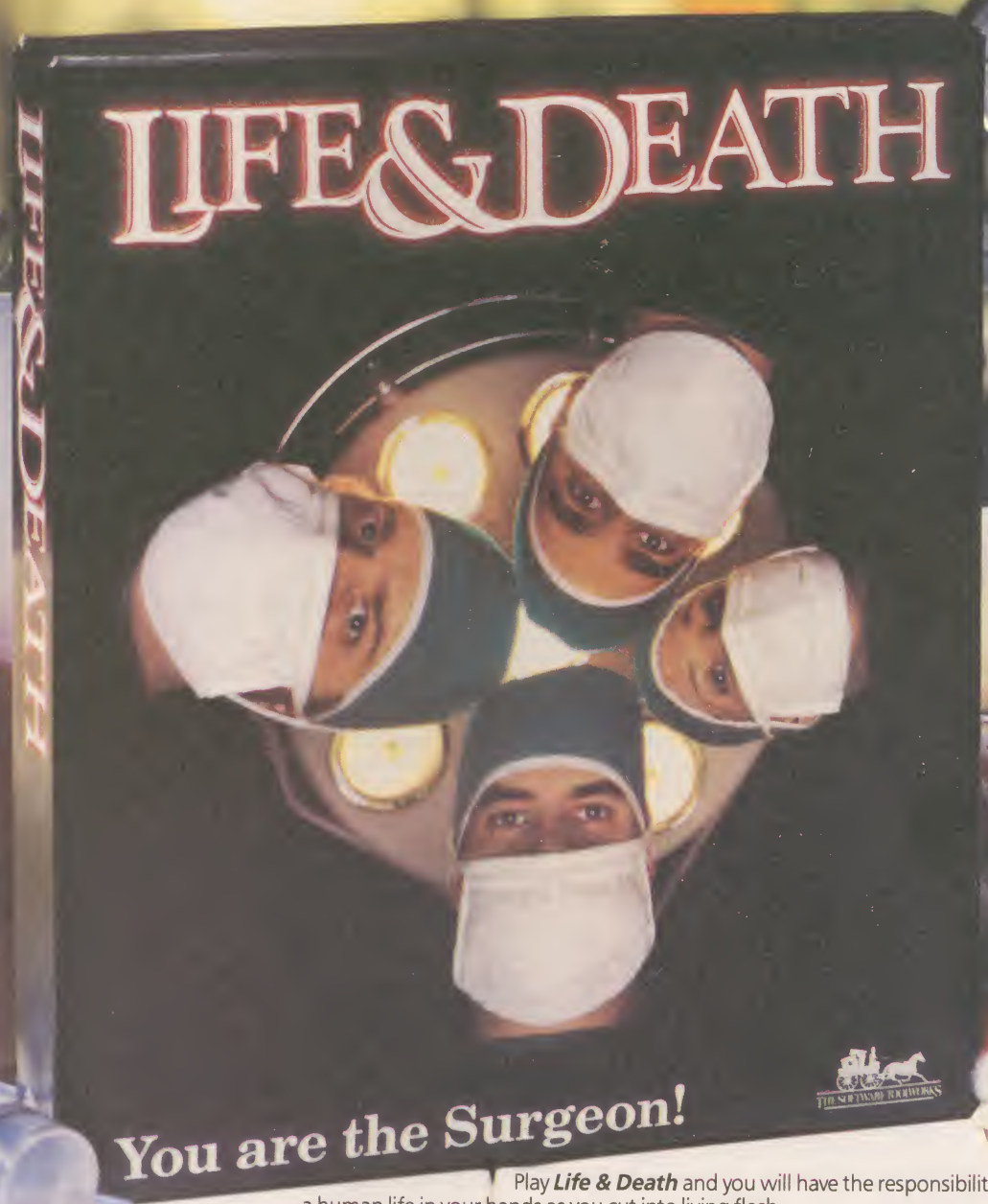


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# X MARKS THE HOT SPOT

***Apart from the fact that there was more software at this year's British Music Fair than ever before, it will also go down as being the hottest. John Bates should know – he was there…***

Sweltering under the domed roof of Olympia in London last week, the perspiring public were treated to aural assault at every step, relieved only by the beauty of the air conditioning in the demonstration rooms that larger companies had set up to display their wares – no wonder they were full.

Only one computer manufacturer had a stand in its own right. Acorn, being the first computer firm to join the Music Industry Association, had a stand housing four software houses displaying their wares on the Archimedes.

## Pandora's box

Pandora Technology, already established as a producer of music software, was unveiling its new sequencer, the quaintly-titled '!inspiration' (sic). Aimed at both the professional and education user, the package introduces several interesting features including dynamic track allocation, full colour-coded displays and real-time tempo adjustment to four decimal places. It requires 1 megabyte of RAM as a minimum. Pandora has its own MIDI interface with four separate outs which in effect gives you 64 channels of MIDI to go at, and these are all controlled with a software package which is a matrix patchbay. At £399, though, it is hardly a steal, but you do get a year's free membership to The Music Network, the new on-line computer system for musicians, with access to the Pandora exclusive user conference.

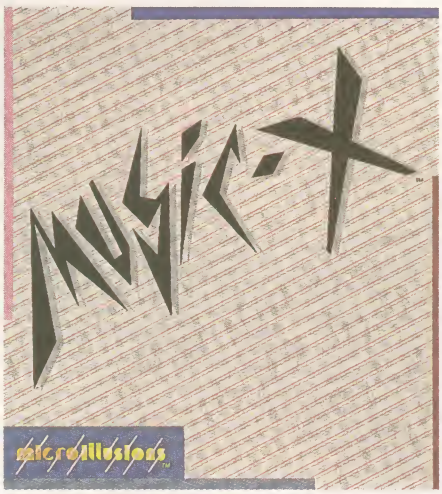
Around the corner Armadillo Systems was displaying its professional-quality sampling package *High Note*. This is a 16-bit sampler with four times over sampling up to 176K, and the results are very convincing indeed. However, the soft and hardware will set you back a bank-balance slimming £1,200, which puts it firmly in the domain of the professional or well-heeled enthusiast. Armadillo also markets a more homely version, the 8-bit *A448*, which comes at the more reasonable price of £135. Both of these require backplane to accept the sample card.

As eloquent as ever, Mike Beecher was displaying the Electro Music Research range of products as only he can, entertaining the audience in the process. The *Studio 24* sequencer and scoring package is now expanded to 99 tracks and can be linked to a graphics package and also synched to SMPTE code with an additional card. Two new packages, *Rhythm Box* and *Handimusic* have been designed specifically for "special needs" education, and *VU Music* is a simplified real-time scoring package.

## The Musical Archie

Acorn itself was showing the multiple uses of the Archimedes and generally getting used to working in a musical environment. It was interesting to notice that Archies also appeared on Roland, Casio, Kawai and Technics stands as well. In particular, Kawai is using it as a basis for a 16-instrument MIDI classroom teaching system. It is good to note that the A3000 Archie now has built-in MIDI ports.

Opposite the Acorn stand was one whole stand devoted to the new Amiga blockbusting package *Music X*. It is a 256-track, multitasking MIDI workstation. It has real-time graphic and data stream editing, multiple-track recording, key mapping, patch editing modules for Roland D50, Yamaha DX7 and DX100, and Casio CZ1000, MIDI filtering and software patchbay combined, and it comes with 16 samples which are all editable in another part of the same program. It looks set to put the Amiga firmly on the musical map and makes it a serious contender in the sequencing market. It is the first program that really makes full use of the multi-tasking features of the Amiga and it is certainly a giveaway at £199 plus VAT.




• Music X: Major new release for the Amiga

## STuffed full

In the other camps, there were two major new programs for the ST, which is far fewer than last year – is the ST market on the wane, or just saturated?

The first was the all-British *Virtuoso* program from Digital Muse. This has had a heavy press build-up, and was receiving its first public outing. It does away with the GEM environment and therefore appears to be multi-tasking, printing and saving sequences and songs while playing them. It has about the highest note resolution at 480 clicks per quarter note, and very fast display and scroll times. With text editing features and further features to be available soon, it should get its foot in the door of the sequencing market.

The other major program for the ST was from Comus, again on the Soundbits stand. *ProScore* is a 32-track sequencing and scoring package similar in design to the rest of the Comus range. It has real and step time entry and editing, separate chord and drum tracks and will output either the whole score or individual parts to either a 9 or 24-pin dot matrix, or laser printer. It accepts MIDI files as well as files from other Comus programs, and runs on a minimum of 1Mb and a mono screen. At £299 inc VAT it looks set to make a very good impression on the user-friendly market.

## Something clicked

Sound Technology was displaying the *C-Lab Notator* updates for the ST, which include an increased click resolution of 1,568 per bar and also a human feel option which picks up the tempo from your playing. An optional bolt-on will allow you to input the tempo you want aurally by clapping or by playing a rhythm track to it. There are also enhanced SMPTE features on the update.

More multitasking from C-Lab with its *Soft Link*, which is compatible not only with C-Lab's own software but with any software that uses GEM. By using a 4Mb ST it will allow you to swap from program to program whilst all are running. In some cases the programs can be made interactive, so for example a DX7 programmer can be used to alter the tone of the synth and the sequencer running in the background will remember the parameter change.

Roland launched the first tone modules and pads specially designed for the computer musician. The CM-32L, CM-32P and CM64 are all modules with no LCD display but work with sequencers rather than keyboards. Accompanying these are a Digital Fader, a Music Entry Pad and an Intelligent Arranger, all again designed with the computer in mind to make life a little simpler when entering and editing MIDI data.

All in all, a hot – in more ways than one – music fair.

## Who to call

| | |
|---|---|
| Pandora Technology | 01 861 4412 |
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| EMR | 0702 335747 |
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| Soundbits | 021 733 2063 |
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# YOU HAVE TEN DAYS TO COMPLY...

*Win a Robocop video – and a machine to play it on!*

Unless you've been stuck in a lift for the past six months you'll know that *Robocop*, the game of the film from Ocean, has been at number 1 in the games charts since Christmas.

Well, now *Express* is giving away a video of *Robocop* to the winner of our competition – and also a video player to play it on, worth over £200! (It can't record, but it'll play any videos through your TV as normal). Ten lucky runners-up will receive a copy of the game for their machine – it's out on just about every format.

## Who said what?

Here's what you have to do. Below are five famous cops and a saying of theirs. Unfortunately the sayings have got mixed up – you have to match the saying to the right cop. If, for example, you think that Dixon of Dock Green said "Who loves ya baby", write A–2 and so on. We also want a tip on your favourite game.

Send your answers on a postcard to **Robocop Competition, New Computer Express, 4 Queen St, Bath BA1 1EJ.**

Don't forget to tell us your name and address, and what machine you have.

**A. Jack Warner as Dixon of Dock Green:**
*1. "This is a .45 Magnum, the most powerful handgun in the world. It'll blow your head clean off. Go ahead, punk, make my day."*

**B. Clint Eastwood as Dirty Harry:**
*2. "Nahahaha! Who loves ya, baby?"*

**C. Telly Savalas as Theo Kojak:**
*3. "Elementary."*

**D. Basil Rathbone as Sherlock Holmes:**
*4. "Drop the gun. You have ten seconds to comply."*

**E. The law enforcement machine in Robocop:**
*5. "Evening all."*

**Closing date for the competition is 15th August 1989 – so there's no time to waste!**


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## NEXT QUESTION?

Could you tell me what computers the *Express* staff own? You cannot be totally unbiased, can you? Like when you said Amigas can only display 32 colours at a time? I know the STE made you excited, but there's no need to lie, is there? Ever heard of EHB and HAM? I do not think 256 colours beats 4,096, eh?
*J E Rowland, Amiga, PET and IBM owner, Broadford Bridge, West Sussex*

● ***Rik Haynes has an Amiga, C64 and VIC-20, Andy Storer has an ST and QL, Rob Ainsley has a PCW, a Z88 and a Ricoh laptop, Angela Neal has a UK101, and Jerry Glenwright has an Atari 8-bit, a PC, a ZX81, an ST and an NCR. Colin Campbell claims never to have had a computer. We all use Macs to write Express. Sorry if this is too biased for you.***

***Whichever computer you used to write this letter, I'd get it seen to. It keeps putting question marks at the end of every sentence.***

## THE BILL

I know that it may be impossible for legal reasons to print the names of firms that have outstanding debts with your magazine, but would it be possible to list the names occasionally of mail order firms that pay their accounts on time? It would certainly help your readers who are undecided about mail order buying and maybe it would assist the future of Express and its competitive price by encouraging firms to settle accounts on time.
*Keith Reader, Chorley, Lancs*

● ***When I put this idea to the nice people who sell ads upstairs, they said things like 'Aarghhh' and 'Nnnnnn' and 'Ghpthghptgth'. Like all of us decent honest folk who wait for the red bills to come before we pay them, even the most reputable companies tend to pay as late as reasonably possible. I think it would cause too much bad feeling.***

## RADIATORS FROM SPACE

I was worried by your recent article on the dangers of computer monitors; could you please tell me do monitors emit radiation when they are turned off? I wish to know this as my computer workstation is situated in my bedroom, thus meaning I am close to it for about twelve hours a day.
*M Pinder, Preston*

● ***No, only when they're turned on; so long as you take regular breaks, say 15 minutes per hour, and spend no more than 20 hours a week in front of a monitor.***

***But I'd still see a doctor if I were you – to see if he can cure you of sleeping during the day.***

## SOUND MIND

Just a short note to say how much I like *New Computer Express*. I have been taking this mag for around three months now in place of another weekly computer mag, and I find that *Express* has more valuable reading matter and is far better value for money than the other.

One feature I particularly like is the small amount of space devoted to games. I feel that you have struck an excellent balance between the frivolous and the serious user, and I hope and pray you will not adjust this in favour of the frivolous. There is a sufficient number of magazines devoted to reviewing so-called games already. You have also, in my opinion, struck an excellent balance between the various makes of computer with no bias towards one particular make.

I enjoy reading all your features, readers' letters and technical reviews in particular. I also enjoy reading through the advertisements, as I buy all my hard and software by mail order, so far with every satisfaction and no hassle.

So congratulations and keep up the good work.
*Don Gordon, Sheffield*

● ***Well, gosh, er, thanks very much. As you say, there are plenty of monthlies out there devoted to games, and so we're actually condensing and rejigging our games coverage to make it more newsy and less reviews-oriented – hence the new style games pages in this issue.***

## THE PD RIPOFF REVISITED

While agreeing totally with the comments and your reply in Neil Slater's letter (*Express* 37), I feel that one very important point was missed.

It's the people that are willing to pay up to £3.00 for a single-sided PD disk that allows them to charge that price!

On rip-offs and the Big 3 PDLs in the past few months, I have received from them a virus blank unformatted and several disks that are less than half full (!) with under 60K on them.

So come on, PD buyers, don't let yourselves get ripped off. Find out what you are getting first.
*Melvin Quelch, Reading*

## CALL THE VET

I am very concerned as to how you vet the business people that advertise in your magazine. The advertiser to which I refer is Computer Stationery (UK).

On 6.6.89 I forwarded a cheque for £19.90 for 10 disks. I have never received them. I have phoned three times but I am unable to contact the people concerned.

A young lady answered the phone and said she would pass a message on. On each occasion I have left my phone number but have never had a reply. The person answering the phone told me that this firm only has an office there and collects the mail in the morning and is not seen the rest of the day.

Is there anything you can do to assist me in obtaining either the disks I ordered or a refund of any money? According to my bank statement the cheque was cashed on the 12th of June.
*D G Barradine, Cardiff, South Wales*

● ***There isn't much we can do to 'vet' a company – we can't afford to send people up to check out their premises and make sure they actually have software in stock and are organised enough.***

***All I can suggest, as usual, is that you try your local Trading Standards office. We no longer take adverts from this company.***

## SEGA YOU JIMMY

Is Craig "who says Amiga owners are really paranoid about people knocking their computers" Thornton (*Express* 37) serious, or what? How can he possibly think the Amiga's better than the Sega?

Here are some facts for him to choke on:

1. The Sega doesn't have a horribly grindy disk drive
2. The Sega doesn't have AmigaDOS (Thank God!)
3. The Sega doesn't have a codpiece hanging from the back of it
4. OK, the Amiga may have better colours and sound – but if you use it on a telly you lose the stereo and about half the screen
5. Does Craig "of course I'm glad I bought an Amiga (phew!)" Thornton really use his Commie for desk-top video, programming, drawing, music and business?
6. The Sega doesn't have a power supply that disintegrates 15 minutes after switching it on

I don't really want to knock the Amiga, but I do it anyway.

*The Anonymous people from an Anonymous computer shop*

● ***A cod piece? Not another fish joke about Commodore?***

## VIRUS POWER

When is a virus a useful virus?

This may sound rather drastic, but one possible solution to piracy would be for software houses to insert an anti-piracy virus on their disks, whereupon duplication of the disk would install the said virus, and the only way to clear it would be by purchasing a virus killer disk from the software company (charged at the cost of the original piece of software), to clear that particular virus.

I am sure a virus could be used in this situation without infringing the legal rights of the user and I believe this would deter a large number of the pirate community. The cost of such a scheme would be met by the increased sales of software that would no longer be copied.
*A Conlan, Preston*

● ***Using viruses like that would be a bit like using myxomatosis to keep rabbits off your lettuce. You'd end up killing hundreds of innocent bunnies on your estate, and the odd couple of myxie-resistant rabbits would still nick your lettuce.***

## CHEAP – AND NASTY

It was with great interest that I read the letter entitled "The great PD ripoff?" in issue 37 of *Express*. The big difference between the companies that charge £3.00 and the "companies" that charge £1.50 is often the quality of service.

A while back I found a PD supplier (who shall remain nameless) who offered a small range of disks for £1.75 each. I ordered a few. After several days I received all but one of the disks – the one missing had been corrupted and would be sent to me at a later date. The disk labels were hand-written, scruffy, and were coming off – and kept getting stuck in my drive. The disks worked fine, so it didn't really matter.

About a month later I received the missing disk – in a plain envelope, no protection whatsoever, and no label! If it wasn't for the fact that I got a receipt with the disk I wouldn't have known what it was.

That's not all! The disk itself had obvi-

# EXPRESS MAIL

## Dear Reader

*More pages packed with comment, complaint, commendations and controversy – and Rob Ainsley's replies. Make your voice heard in computing's liveliest letters page! Send your contributions to:*

***Express Mail, 4 Queen Street, Bath, Avon BA1 1EJ***

*PS. Sorry, we just don't have the time to give personal replies, whether you include an sae or not. We're too busy putting Express together!*

• How dangerous would this be in your bedroom (the monitor, not the secretary) asks M Pinder

ously been crushed. One edge was damaged and the shutter was not operating properly. In addition to this, it seems one of the programs on the disk is missing – the disk is a hacker's demo with ten parts, but the tenth is missing. This is probably due to the corruption of the disk, but it should not have been sold incomplete.
*Philip Harris, Banbury, Oxon*

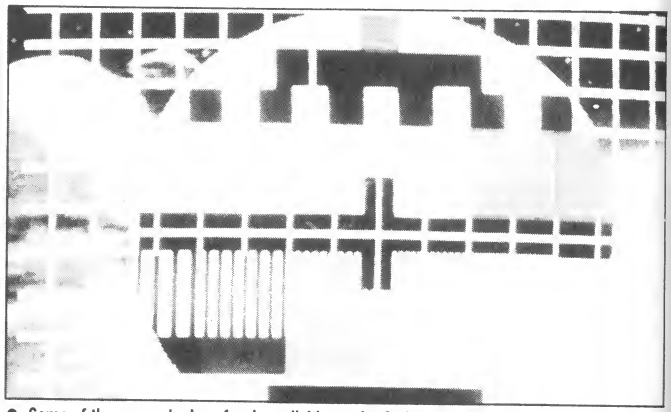
● ***Maybe you do pay for what you get, though I'm still sure some people are making money out of PD.***

### COLOUR PREJUDICE

After hearing so many Amiga (and now Archimedes) owners bragging about their 4,096 colours, I was moved to wonder whether a list of all 4,096 existed. I couldn't find one, so I decided selflessly to write it myself, and I'm proud to present edited highlights for anyone with a brain small enough (512K?) to think it matters:

1 White
230 Elastoplast pink
254 Pink Panther pink
275 Vaguely sort of flamingo-coloured
310 Very, very pale red
400 Sunburned flesh
440 Ripe tomato red
470 Red
471 Reddish
472 Red, but not quite as much so as 471
489 Severed artery red
518 Week-old squashed rabbit entrail red (aka A303 red)
601 A red so dark that 99 per cent of monitors show it as black
1201-1800 Greens, from off-white to almost black
1801-2500 Blues, from off-white to almost black
4000 Mid-grey
4050 Dark grey
4096 Black

Worth boasting about, don't you think?
*Stephen Mercer, Shaftesbury*



● **Some of the many shades of red available on the Amiga. (For those of you reading in black and white, the pink is next to the crimson).**

● ***Cynics say that computers can only really display three colours. As the proud owner of a PCW I can list fully the three colours of my 8512:***
***0 Black***
***1 A pastelly sort of limey off-green colour***
***2 Er, that's it.***

### HYPE SPRINGS

My nomination for the Pigg book of PCW superlatives is *New Computer Express*'s coverage to date of *Micro Design 2* (category: the greatest amount of pre-launch hype that an untested PCW program has yet received in any computer magazine).

As they say in the lager ads, Micro Design is good, but it's not that good.
*J B Evans, Bath*

● ***If you think that 300 words of preview in the run-up to the launch of a program that was already out in a similar incarnation on the PC is 'the greatest amount of pre-launch hype' etc. I can only say what a blissfully sheltered life you must have led. Our reviewer thought that Micro Design beat Stop Press so there you are.***

### COMMIES AREN'T ALL BAD

I was surprised to read of Alan Smith's delayed repair of his Commodore machine (*Express* 37).

My experience dealing with the company on a direct basis was that my machine was turned around within a four week period. I must admit it was mainly thanks to their Service Manager, who chased the repair firm into action. He was not only polite and understanding, but kept his promise.

Although my machine was a PC1 and not an Amiga, I honestly feel a phone call to the Commodore Service Manager would be an action likely to reap a very urgent response, and even see your machine returned within three days.

This PC1 is the first Commodore machine I have owned, and although it needed a repair after only five weeks, I would buy another Commodore product, knowing that you can still get fair response from a big fish, when we are still the minnows.
*Mark Link, Crowborough, East Sussex*

● ***Congratulations, Commodore. If Commodore were a fish, I suppose it would be a goldfish – always opening its mouth, but just going round in circles. Amstrad would be a shark (big, powerful, aggressive and hasn't evolved further since 100,000 years ago) Atari an octopus (the right arm not knowing what the other seven are doing) and Sinclair a crab (always going in a different direction to everyone else).***

***And no letters from smartarses telling us a crab is not a fish. Crab paste is along with the fish paste in Sainsbury's so that proves it.***

### WILL TWO HALF WITS DO INSTEAD

What's happened to *New Computer Express*? In the dim, distant past there was an excess of wit, humour and buffoonery. This was reflected in the letters, the news pages and the loud front cover in particular (I loved the front cover).

Ever since you changed that to a "standard format", Express has sunk deeper and deeper into the yawning abyss of sensibility. Where are the letters from those furtive self-manipulators trying to inflate their tiny egos, claiming to put viruses on BBC micro networks, the references to "ish 30" and the unending banter in every phrase?
*Michael Stirling, Hounslow, Middx*

● ***More wit. OK. Enter Oscar Wilde, left:***
***BOSIE: Oscar, dear Oscar! Have you seen this week's ish of New Computer Express?***
***WILDE: Bosie, my dear, there is only one thing worse than reading New Computer Express, and that is not reading New Computer Express.***
***BOSIE: Never mind that, have you seen this article on copying on page 14? I wanted to buy a Multiface for my CPC, but now...***
***OSCAR: There is is only one thing guaranteed to damage the games industry more than***

# More Top Tens!

Another roundup of your most hated things about computing...

### WATCHBITCHES?

Here are the ten things I hate most about computing:
1 Tiny sprites in games
2 Rubber-keyed Spectrums
3 Cassettes and associated loading difficulties
4 People who aren't interested in computers
5 People who cannot talk about anything else
6 Games that are too hard (Denaris on the Amiga)
7 Boring games (Terrorpods)
8 Oversensitive games (Grid Start on the Amiga – clip a haystack at 5mph and see what happens)
9 "Watchdogs" who complain about sex and violence in computer games then go home to beat their kids then force them to watch "Cannibal Holocaust". I won't name her, she knows who she is.
10 Not enough sex and violence in games
*Neil Barnes, Birmingham*

● ***She knows who she is, and we know who she is, but I bet she doesn't read Express, or drink Carling Black Label.***

### BLACK PRINTS

1 Printers that don't let you use the top two inches of single-sheet paper (like this one)
2 Lack of after-sales service for Amstrad CPC users (e.g. no reprint of firmware manual)
3 *Express* competitions I never win
4 Computer companies that let you order software months before completion
5 Spectrums
6 Battery-powered acoustic modems
7 7p a minute + VAT + phone bills comms networks (i.e. Prestel/ Micronet)
8 All computer magazines except *New Computer Express*
9 Multi-loading tape software
10 Cut sheet feeders and tractor units that cost more than the printer itself
*M Pinder, Preston*

### PCW SHOW

1 People who waste a perfectly good computer, playing games on it instead of really using it.
2 People who buy a game and spend God knows how long sorting out ways to cheat because it's too difficult for them to win.
3 People who moan that games are too expensive. Do what I do if something is too dear. Don't buy it.
4 Comparing one computer with another. My PCW9512 may not be fast but it does what I want it to do easily and with no hassle for me. If someone else wants one which does something different OK I couldn't care less.
5 People who slag LocoScript. Remember the old saying, 'Never look a gift horse in the mouth'.
6 Firms who don't bother to reply, even just by saying 'Sorry there's a hold-up' when you have enclosed a stamped addressed envelope.
7 Instruction book writers, who seem to assume that I have a PhD in computers.
8 Computerese.
9 The 'Syntax Error' message I get, which doesn't tell me what I have done wrong. (Say what you like LocoScript is kindly).
10 Computer magazines who only allow one quarter of a page for PCW in their Your Format pages.
*Derek B Lilly, Clevedon, Somerset*

● ***If LocoScript is an ungulate then it must be a workhorse rather than a racehorse – great for workaday and business use but not so good for the professional writer or journo.***

• **Possibly the person Neil Barnes is talking about in point 9, or possibly not, reading the Viz annual, or maybe something else**

*having copying devices, and that is not having copying devices.*
*BOSIE: Shut up, you old queen, and read the article. It says...*
*OSCAR: There is only one thing more disconcerting than being abused by one's friends, and that is not being abused.*
*BOSIE: Oh, bog off, smartypants. I'm off to play* Operation Wolf.

### ARGH! ANOTHER GUINEA PIG LETTER...

In response to your item concerning the employment of a guinea pig to write a regular column in your magnificent magazine. I would like to apply for the job.

I am in actual fact a guinea pig and play lots of games on an Atari 520STFM. I purchased a copy of Carrier Command and rushed home to play it. Alas, it would not load, so back to the shop I went, whereupon the assistant "shop tested it" and it loaded and ran perfectly. He told me to try it again at home and if it still didn't load then to bring my computer in and he would check it out for me.

Needless to say it didn't load so I took the cassette and the computer back to the shop. The computer was checked and found to be in A-1 condition (apart from the odd sunflower seed here and there), but when he went to load the cassette tape into the disk thingy he burst out laughing "You're a guinea pig, aren't you?" he asked. "Yes", I replied rather sheepishly, as a crowd had started to gather around us by this time. "How did you know? What gave it away?" "Simple really", he said tickling me behind the ear. "Only a guinea pig doesn't know Spectrum files won't load in an Atari."

I am married to a lovely pig of a wife and we have eighteen little guinea piglets... oops! Better make that twenty-one, er twenty-four, twenty-seven, whoops, prolific little breeders aren't we?
*George G Pig, Falkirk*

● ***Well, the gestation period of a guinea pig is sixty days of course, and they are perhaps not quite so prolific as they are generally supposed to be. But I'm not sure how a guinea pig can be sheepish.***

## Snippets

### PAIN IN THE NEC

...May I point out a slight mistake you made in your review of MGT's Lifetime Drive (Express 37). Andy said it was 'a standard 3.5-inch NEC drive' – well he's wrong, it is a Citizen 3.5-inch drive...
*The Mad Man, Cambs*

● *No.*

### SAM CHANCE

Will the SAM Coupe will have its own column (if it's popular) or will it be included in the Spex column?...
*Justin Wood, Coppull, Lancs*

● *It'll have its own column – if it's popular enough. We'll make space by axing another column: suggestions to Express Mail...*

### B ACKING HACKING

...I am very pleased that hacking is still legal (Express 36). The fact that the Commons didn't even deem it important enough to discuss shows what they think of Nicholson. They were probably too busy handing out lager to worry about her...
*The Mad Man, Cambs*

● *MPs, lager louts? Nar, they ain't as cultured as that, just lissen to 'em on the radio, har har har.*

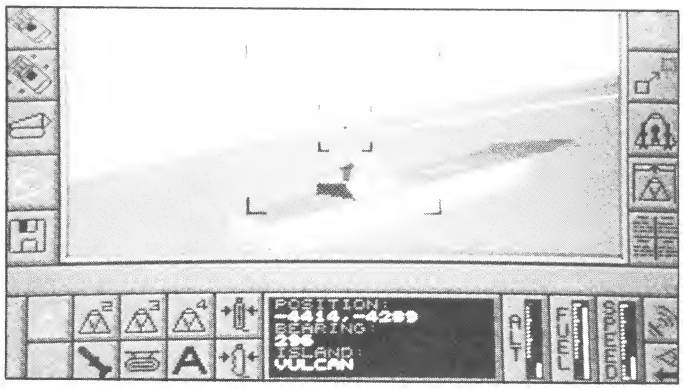
### MORON PREACHER

Re Craig Thornton's letter (Express 37) the Sega has 64 colours, the Amiga 4,096. Whilst 'any moron can work out this gives the Amiga just over a 98 per cent increase' in the number of colours, non-Amiga owners will recognise that the Amiga has, in fact, a 6,300 per cent increase...
*J F Winnicott, Fareham, Hants*

● *All sounds like the difference between profit and mark-up to me. Or maybe his Amiga crashed while working it out.*

### Express needs you!

We want you to send us your pokes, cheats, hints, tips and high scores on the best games around at the moment. Send them to us at **Gameplay, New Computer Express, 4 Queen St, Bath BA1 1EJ.**




• Carrier Command is just too confusing for guinea pigs, says George G Pig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# CAUGHT IN THE

***The Copyright Act is now in force, and affects everyone who ever copies a disk. Have you read it yet? Steve Carey reveals that Things May Never Be The Same Again...***

The Copyrights, Designs and Patents Act 1988 comes into force on the 1st August. But few of those likely to be affected – programmers, pirates and producers of copy-protection busting devices – have read it. Fewer even begin to understand it, and no-one is quite sure exactly what it means.

The Act concerns anyone who uses a joystick or a keyboard and focuses on software duplication and copy protection.

Penalties for breach of copyright range from forfeiture through heavy fines to a gaol sentence of up to two years. So it is important that *you* know what the Act says, and whether you can expect Bob Hay and the other boys from the Federation Against Software Theft to come charging up your garden path.

The dramatic impact of these apparently draconian measures is weakened, however, by the fact that such penalties are likely to be enforceable only against commercial pirates: precedent suggests that buying a copyright-infringing article for personal use is not a criminal offence (but may still lead to civil prosecution).

## Getting your back-up

The rights and wrongs of copying software is the most hotly debated issue of computing in the 1980s and the impending 90s.

Surely if you spend a considerable sum of money on a computer program you are legally entitled to make a back-up in case anything goes wrong? Well, no.

Of course you're unlikely to find yourself in the dock just for taking the eminently sensible precaution of backing-up. But the fact remains

## Peter Pan and immoral yearnings...

**The Act is a necessarily complex and daunting 200 pages of legislation, but in some respects it is astonishingly vague, and in others bizarrely particular.**

**A page and a half deals with the fate of the royalties of *Peter Pan*, yet nowhere does it define the terms "computer" or "computer program"!**

**The intention, it seems, is to allow for developments in technology which are occurring with such rapidity and startling unpredictability that it would take a brave Parliamentarian (a contradiction in terms?) to legislate for them in advance.**

**Even so, some of the current legislation will no doubt provide future generations with plenty of harmless amusement.**

**One clause offers more immediate entertainment. Under copyright law the author of a work generally has the right to be identified as such, and to object to derogatory treatment of his work – his so-called "moral rights."**

**It will amuse cynics of the computer world to note that, according to a guide to the Act, "It was thought to be particularly difficult to cope with moral rights in the computer industry..."**

**As a result, the above mentioned rights to be identified as author and guard against derogatory treatment of one's work do not apply to computer programs. It seems that Hitman Haynes can sleep easy!**

## What have I got to be worried about?

**"The Blitz lead [for the ST] is a disk copier: it bypasses the internal disk controller in the machine, so you can make copies of disks – on the ST about twice as fast as using the disk controller.**

**"The fact that it also copies 99% of all software is a kind of side-benefit – it's obviously a very important one, but it is definitely a side-benefit.**

**"We didn't set out to create something that could copy protected software: it just happened that way.**

**"Just because you can buy a Ferrari that will drive at 160mph doesn't mean it's legally allowed to do that.**

**"And if you sell someone a photocopier you're not authorising them to infringe copyright by photocopying books."**

**– Ken Browning (Power Computing)**

**"That's nonsense... Change the analogy. We have less gun crime in this country because guns are limited. Ban copying devices and you ban piracy."**

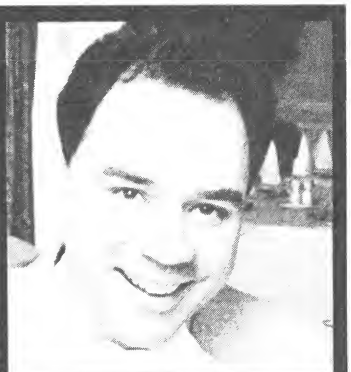
**– Jez San (programmer, *Starglider II*)**

**"Yes I've read it. No, I don't welcome it. Am I worried? I don't give a ****. Not in the slightest bit worried.**

**"What have I got to be worried about? We've taken legal advice and we won't be selling any of these devices after the first of August.**

**"These 'loopholes' look a bit contentious to me. I don't want to be the test case, put it that way."**

**– Richard Austin (Evesham Micros)**



**• At least one company has changed its way – Richard Austin doesn't fancy Evesham Micros being the test case**

# E ACT?

you have no absolute legal right, even under the new Act, to do so.

And if, having tired of a favourite game you sell it secondhand but keep a copy "just in case," then it is *you* who are breaking the law. Sell the program and you sell the licence to use it or to possess a copy. You have been warned.

For software users, two sections are of prime importance. The first is concerned with the sale or possession of anything that enables infringing copies to be made:

**24. — (1) "Copyright in a work is infringed by a person who, without the licence of the copyright owner –**
**(a) makes,**
**(b) imports into the United Kingdom,**
**(c) possesses in the course of a business, or**
**(d) sells or lets for hire, or offers or exposes for sale or hire,**
**an article specifically designed or adapted for making copies of that work, knowing or having reason to believe that it is to be used to make infringing copies."**

The second is section 296 (be careful: you may well rupture yourself trying to untangle the syntax):

**296. — (1) "This section applies where copies of a copyright work are issued to the public, by or with the licence of the copyright owner, in an electronic form which is copy-protected.**
**(2) The person issuing the copies to the public has the same rights against a person who, knowing or having reason to believe that it will be used to make infringing copies –**
**(a) makes, imports, sells or lets for hire, offers or exposes for sale or hire, or advertises for sale or hire, any device or means specifically designed or adapted to circumvent the form of copy-protection employed, or**
**(b) publishes information intended to enable or assist persons to circumvent that form of copy protection**
**as a copyright owner has in respect of an infringement of copyright."**

In other words, if you sell anything specifically for breaking copy-protection you can be sued by the owner of the copyright of the computer program. This, it has been argued, might apply to hardware such as Blitz for the ST and Amiga or the Multiface for the ST and CPC; or software such as *Copy II PC* or *The Marauder.*

## Meaning what, specifically?

What is not yet known is what view the courts will take of claims that a device or software utility is "specifically designed for making [infringing] copies."

After all, very few such devices cannot be used for copying *non*-protected software, and many have other purposes that would seem to put them in the clear.

In the absence of a test case no-one can be quite sure what interpretation the courts will take of this necessarily complex legislation. The Act has been given a less than ecstatic greeting by those such as FAST's Bob Hay whose job it is to chase pirates.

It will not be until a test case has been brought that we will know for sure whether the Act has teeth. ●

## Exhibit A: The weapons used

The controversial copying devices at the centre of the row over the Copyright Law are small cartridges which plug into the back of your micro.

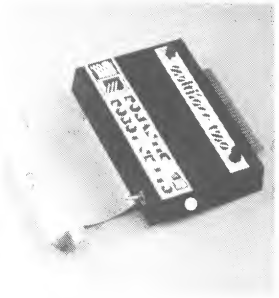
At any point while running a program you can press a button on the device and 'freeze' the program, enabling you to examine the memory and, most importantly, allowing you to save the contents of the memory out to tape or disk – thus allowing you to make a backup copy of even the most rigorously copy-protected software. Makers of the devices constantly update their products to combat the latest copy protection techniques.

The net effect of this is that with a backup device such as this you can make copyable copies of any piece of software for your machine. While most devices only allow you to run your backups made in this way with the device attached to the machine – thus preventing the distribution of pirate copies on a large scale – some of the newer devices don't need to be present when copies are run, making them ideal for pirates.

It isn't clear whether or not The Copyright Act, which came into force on August 1st, makes the sale of these illegal *if* they are advertised as devices for making *backups.* Advertising them as *copying devices* would be illegal. It would take a test case to decide.

Some of the devices which have been on sale recently are: Blitz (ST, from Power Computing); Expert (C64, from Trilogic); Multiface (CPC and ST, from Romantic Robot); Mass Duplicator (ST, Evesham Micros).

As you read this it is expected that only Blitz will be on sale. The other manufacturers are playing safe.



• Hardware products such as Romantic Robot's Multiface II, claim its opponents, can be used to aid piracy. Romantic Robot vigorously deny the charge

## The "bitter" victims of piracy

*"Starglider II,* despite the rave reviews and everything, barely broke even because of piracy.

"Hardcore pirates are always going to pirate and you can't stop them.

"But the people who get games from pirates, who might have bought a game and don't – it's a shame, because they don't get the full enjoyment of a game, the manuals and books that go with it, because they don't know how to play it. They pirate it and then they don't buy it.

"The programmers who put the most work into a project get the least return. We really *need* those sales to make money."

– Jez San (programmer, *Starglider II)*

"I am *furious!* It's a dreadful, dreadful shame the Act is so loosely worded and easy to get round...

"How do I feel about someone like Ken Browning? I feel very bitter. There *are* legitimate secondary uses for these devices.

" But at the same time there's no doubt they are used for making illegal copies.

• Smiling through the storm: Digital Integrations' Dave Marshall is "absolutely furious" that the new Act does nothing to stop the pirates

"When I launch a title, I know in 24 hours it'll be widely available on bulletin boards, it's going to be cracked and there are going to be copies circulating around. For every copy I sell, there could be five, ten, I don't know how many circulating. I'm not suggesting my sales would multiply by five or whatever, but even if they increased by 20 per cent, then that's a damn good plus point in the right direction.

"If people say Power's Blitz is going to make legitimate back-up copies, they must be living in cloud-cuckoo land. It's absolutely crazy: they're *bound* to be used to break copy protection.

"I don't know how much I ought to say. I can assure you something *is* going to be done, and soon."

– Dave Marshall (Digital Integration)

## A FAST reaction to the Act

"Many people thought the Act would automatically outlaw every single copying device, but lots of devices that allow copying have other purposes, and they're not outlawed. It's where devices are specifically designed to enable one to make infringing copies, they are certainly ones that the lawyers will be looking at.

"If we find pirates we have visited are using copying devices, then that will be evidence that will be given in the case.

"The Act is not something that is going to overnight put every copying device out of business, simply because there are people in the industry who use them in the course of their work, quite legally. As long as that's the case, there's absolutely no way they can be banned.

– Bob Hay (Federation Against Software Theft)

• FAST main man Bob Hay warns that "if we find any pirates we have visited are using copying devices, then that will be evidence"

# SCREENING THE SC

*Whether it's due to accidental erasure or deliberate fraud, it's worth protecting your data against the unforeseen. But then again, just because you're paranoid doesn't mean it won't happen to you. Andy Storer surveys the scene and tracks down a PC product designed to help you rest assured.*

The computer security market is enjoying a massive upswing in corporate circles, with some estimates putting its rate of growth at 50% per annum. A recent report by a City consultancy cited UK losses as a result of computer failure, fraud or viruses as amounting to £1 billion annually. In the States the figure is five times higher. But surprisingly, 75% of all compucrime is perpetrated by a company's own staff.

However, if this begins to undermine your faith in your fellow humans, then rest assured the best reason for buying security software is not necessarily to protect you from hackers or viruses but from operators who may accidentally erase that iirreplaceble file.

Nevertheless, the fact remains that unprotected PCs make excellent high speed copiers and efficient DIY forgery kits, as data in documents can easily be modified or copied without trace. With a local area network, any person using an unsecured PC as a workstation or server has, in effect, the key to every filing cabinet in the office. If the PC has access to communication lines or central files held on a mainframe, additional risks ensue – data can be redirected to unauthorised recipients, being intercepted and diverted during transmission.

So how can you go about ensuring the security of your set-up? Depending on the level of protection required, three techniques can be employed, used independently or in conjunction. These are Access Control, Authentification and Encryption.

Access control is refers simply to those mechanisms designed to restrict authorised system users to specific machines, applications and data. This might take the form of multiple passwords and/or cards or tokens identifying the user. Control will include not only access to specific hard disk partitions and applications but also to printers,individual floppy disks and communication ports. This level of protection will be backed up with "audit trails" of the system's use – a step-by-step log of all entered commands and access attempts.

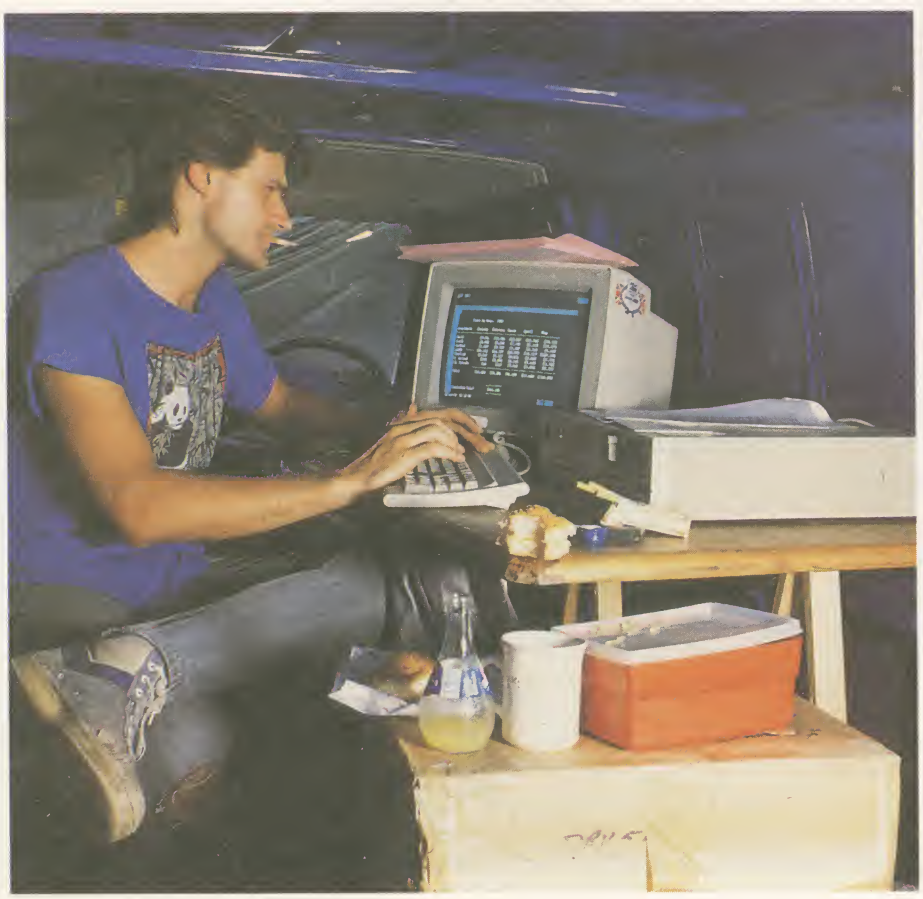
Authentification is an essential part of security, since the ease and flexibility of computing means that documents could be originated and "signed" but have no legal or verifiable status. For instance, a fake memo from a head-office could be sent out by an unscrupulous employee to all field reps informing them of a rise in the price of a particular product. No-one would be any the wiser until the damage was done and sales began to dive. As such, some form of digital signature is needed to enable the contents of a document to be proven irrefutably.

Finally, and possibly of most deterrence, is the use of encryption algorithms to transform data from the intelligible "plaintext" to the unintelligible "cyphertext". Each transformation is made unique by complex mathematical processes and can result in encryptions which would take the most powerful mainframe years to decipher. In order to encrypt and decipher text, voice or signals, authorised users are given encryption keys. One recently released software package combining all these security measures is *PC Guard*.

### PC GUARD ● Computer Security (0273 672191) ● All PC Compatibles £195.95 + VAT

*PC Guard* is a software-based security package providing a shell under which all DOS applications run for a memory overhead of only 38K. The package is set up around providing differential access to three levels of user. An overall systems administrator, nominally the company boss, is required to initialise the system with a key password and ID, after which any number of day-to-day administrators are chosen and allocated access. The key password is then safely locked away to be used only in emergencies.

The day-to-day administrators then decide who to allocate normal access to and what they can do once logged on. For example, some users will only be allowed to read, open, search and execute certain programs – the deletion and creation



## Pirate radio

Because TVs, computer screens, sockets and cables all emit radiation, making them in effect miniature radio sets, it's possible to use equipment costing only a few hundred pounds to pick up the signals up to two miles away. Although in daylight hours there's usually sufficent background electronic noise to mask such transmissions, it's the evenings that are the peak times for electronic eavesdropping. Moreover, unforeseen coincidences like the proximinty of fire alarm cables to VDUs may ensure signals are broadcast all over a building and beyond.

It's easy to get carried away with the threat of eavesdropping. The leading equipment for the suppression of electronic signals given off by electrical devices is Tempest; built to NATO approved standards and adminisitered by GCHQ. Tempest gear ranges from metal shields surrounding VDUs to full-blown "shelters" – at up to £100,000 a go – looking like bank vaults the size of small mobile homes, with three nested enclosures using walls several inches thick.

A simpler means of scrambling electronic emissions is by using magnets – ironically the one device bound to corrupt every single bit of code you have stored on any media other than optical. Eavesdropping can be minimised though by banning overtime and by making sure there's always more than one VDU in use at all times (thereby emitting overlapping signals).

Meanwhile, tuning into computer screens is no more illegal than tuning into radio stations.

# CREENS

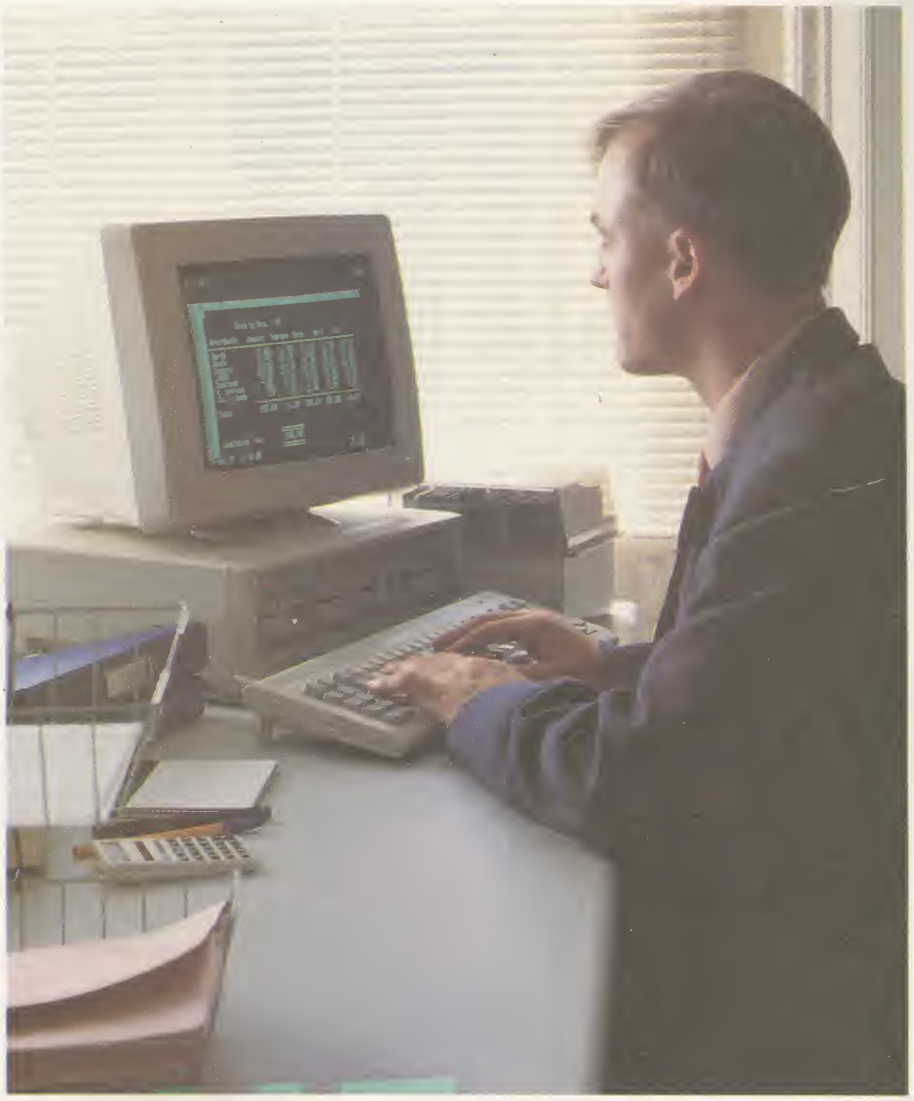
of files being denied. Indeed, the system may be configured so whole areas of hard disks are invisible to restricted users, as *PC Guard* completely takes over all access to DOS.

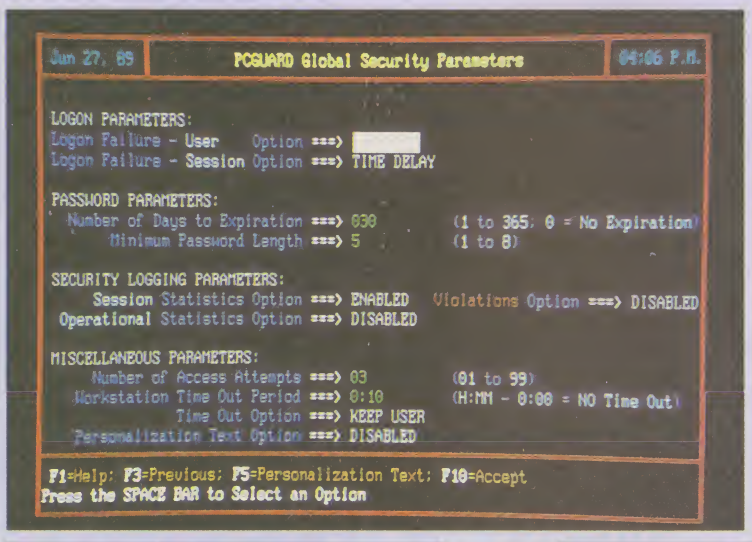
## Closing doors

If you came to a computer running *PC Guard* and decided to try and use it as you would any other PC, you'd be confronted by many kinds of protection. You are asked for a User ID, a password and an optional project ID – each of which can be changed as often as the administrator wishes. Security parameters can be set so that three incorrect attempts to log-on are met with a complete system shutdown. In addition, you may then be asked for papssswords to allow you to run specific applications or load or view specific data files.

Boot-protection may have also been installed which may allow you to load that floppy full of hacking utilities but deny you access to the hard disk. All you're left with is a single floppy drive machine – very useful for testing suspect software that may contain viruses – as there's no way no way you can access the hard disk. Even Norton's latest *Utility* tools will miserably fail to make any impression on DOS under the *PC Guard* shell. But if, by some remarkably hot code, you managed to gain access to a file, you'd find it encrypted with an algorithm even a DEC mainframe running for years couldn't crack. You get the message? If you don't need to know, it don't want to know!

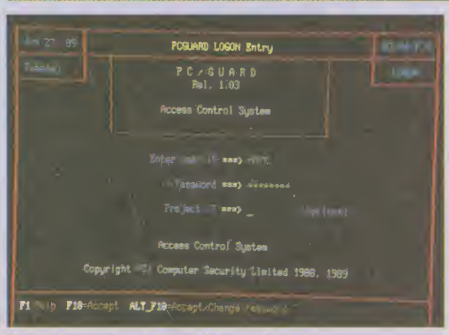
In any case, by this time all your input commands will have been logged and encrypted to a database. In this way an administrator can call up recorded sessions showing all the times when directory changes, attempted copying and deletions, and password violations were perpetrated and by whom. Such logs can be extracted as ASCII files to be analysed by *DBaseIII* or *Lotus 1-2-3*.

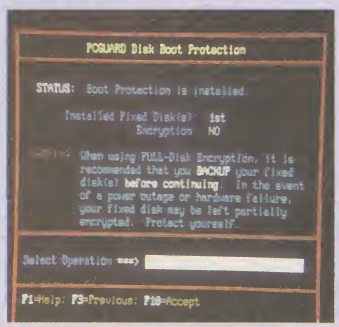



Jun 27, 89
PCGUARD Global Security Parameters
04:06 P.M.
LOGON PARAMETERS:
Logon Failure - User Option ===>
Logon Failure - Session Option ===> TIME DELAY
PASSWORD PARAMETERS:
Number of Days to Expiration ===> 030 (1 to 365, 0 = No Expiration)
Minimum Password Length ===> 5 (1 to 8)
SECURITY LOGGING PARAMETERS:
Session Statistics Option ===> ENABLED Violations Option ===> DISABLED
Operational Statistics Option ===> DISABLED
MISCELLANEOUS PARAMETERS:
Number of Access Attempts ===> 03 (01 to 99)
Workstation Time Out Period ===> 0:10 (H:MM - 0:00 = NO Time Out)
Time Out Option ===> KEEP USER
Personalization Text Option ===> DISABLED
F1=Help; F3=Previous; F5=Personalization Text; F10=Accept
Press the SPACE BAR to Select an Option

1 (left) • The initial configuration, set up by the systems administrator, allows the user to stipulate password and logon parameters.

3 (below) • The first screen the ordinary user will see - passwords are of course only displayed as asterisks


PCGUARD LOGON Entry
P C / G U A R D
Rel. 1.03
Access Control System
Access Control System
Copyright (c) Computer Security Limited 1988, 1989


PCGUARD Disk Boot Protection
STATUS: Boot Protection is installed.
Installed Fixed Disk(s): 1st
Encryption NO
When using FULL-Disk Encryption, it is recommended that you BACKUP your fixed disk(s) before continuing. In the event of a power outage or hardware failure, your fixed disk may be left partially encrypted. Protect yourself.
Select Operation ===>
F1=Help; F3=Previous; F10=Accept

2 • PC Guard's status screens are full of Help options ensuring you don't enact the unthinkable - locking yourself out!

## Express verdict ★ ★ ★ ★ ★

*PC Guard* is very easy to set up and maintain and provides a fully comprehensive selection of measures designed to safeguard your system from both accidental and deliberate incursions. At £200+VAT you might think it a tad pricey, but then it's an insurance policy that could save you thousands in the long run. ➤

Encryption can go as far as cyphering the entire contents of the hard-disk if you wish – the system tracks, boot records, everything. But once done you have no way to unprotect it unless you have the original key password; otherwise even Computer Security can't get back into the system.

## What's at risk?

**In the days of hand-written records, fraud was typified by falsification of suppliers' invoices and expense claims, cash theft with account manipulation, stock theft and the removal and copying of confidential information. Although these old opportunities still remain, new methods have emerged with the arrival of digital record systems. Data can now be read by remote terminals, as networks using public telecomms are vulnerable to hackers able to alter, steal and vandalise systems. Details of a new product range, a strategic plan and sensitive financial information can all be copied to a couple of disks.**

# COMPUTER SECURITY

**SURVEY**

If you run a business on only a single computer, there are a number of precautions you should take to minimise accidental or deliberate corruption of your data – without spending a cent.

Regular backing up of software is the easiest means of ensuring safe hex – along with checks of boot sectors, operating system and appropriate Command functions. Problems may also originate through careless handling of floppies, print-outs and passwords.

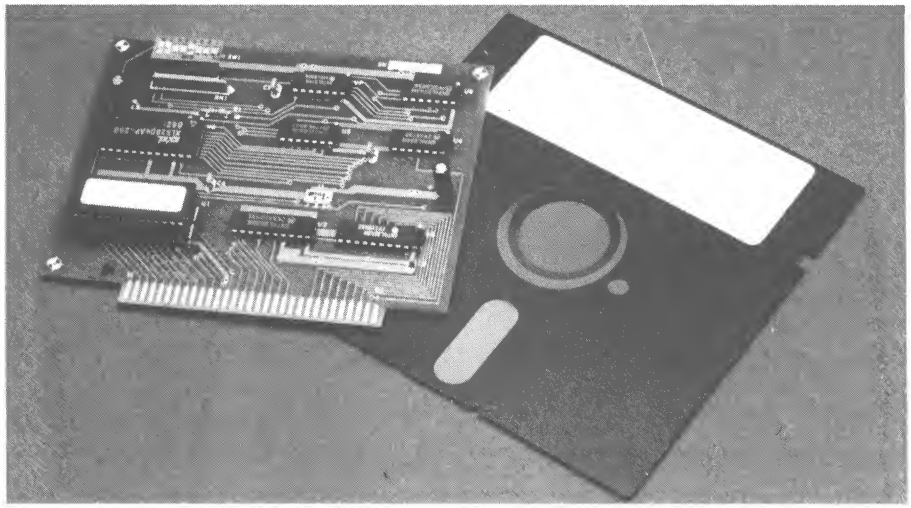
Also watch out for any unauthorised software finding its way onto your system – a cheap virus-infested pirate copy may work out to be extremely expensive.

However, if these sensible suggestions still don't give you peace of mind, two other products on the market might just provide the answer...

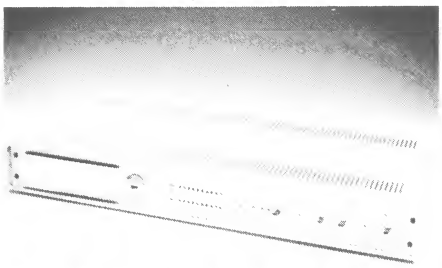
## Cracking the hacker

Conservative estimates of the cost of hacking in the UK float around the £400m mark. As any computer connected to the phone line is at risk, devices which operate as a gate between the modem and phone line are the key to secure comms. One such device is Com-Lock from Cream Communications on 0268 728577.

Anti-hacking systems usually rely on an access code which can eventually be cracked by trial and error. Alternatively, the hacker's skill may enable him to circumvent the the access code altogether. Com-Lock works by requiring the computer-caller to enter an 8 digit code into his telephone – only after the correct code is recognised will digtial contact be enabled. Up to 90 attempts are possible before the system shuts down completely – but as there are a billion possible code combinations, the chances off a hacker getting through Com-Lock to a computer are negligible to say the least. But after only 10 incorrect attempts, Com-Lock goes into offensive defence, giving the hacker the impression his attempts are going undetected, whereas in reality his doomed attempts are being logged and notified to police and telephone tracing authorities. As such, Com-Lock may supply something approaching complete peace of mind... at a price. £950.



• The Personal Access plug-in-card and software: A cheaper alternative to PC Guard



• Comlock 2000: Hardware to make hacking harder

## Personal Access

A cheap and neat little security board for the PC is Personal Access from Trend Dataspeed on 06285 30611. This half-size plug-in board costs £99.95 and provides simple password security. PA disables access to the DOS prompt until the valid password for the PC is entered. A utility program also provides a password history of all unauthorised access attempts.

It's easy to overestimate how interesting your data is to someone else – but if it's the sort of stuff that would be stored in a locked filing cabinet, you'd better start thinking about getting yourself some computer security.●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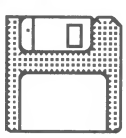

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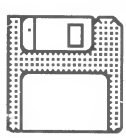

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## Part 16 of the definitive Express guide to computing

# U

**UBISOFT (CO):** Originally a software distribution company, this French firm now produces games. Famous for housing its programming team in a historic chateau in Brittany.

**UNIX (OS):** Easy-to-use operating system developed by Ken Thompson, Dennis Ritchie and others at Bell Laboratories. Unix is taught in most computer courses and is available for all computers from mainframes to micros. A cut-down version for the ST is available, under the name Minix. Every procedure is treated as a separate file. The current version of Unix takes up many hundreds of K. It has many high-level utility programs and is capable of running a number of jobs at once. Some of its applications include office automation, network control and robotics.

• The historic French chateau HQ of Ubisoft's programming team– the company's main claim to fame!

**ULTIMA (G):** Very popular role-playing game created by "Lord British". Originally created on the Apple II, this American series has become progressively more sophisticated. Latest incarnation is *Ultima V*.

• Ultima I: First in a highly successful series of role-playing classics

**UMS (G):** Universal Military Simulator – Rainbird's epic wargaming/strategy release. Graphically less than startling, it nevertheless offers the opportunity for the player to design their own conflict with user-definable terrain that can be viewed in three dimensions from any one of eight directions. Easy to use, it will let you pitch Napoleon's armies against the VietCong if you so wish.

**URIDIUM (G):** Classic horizontally scrolling shoot-'em-up from Hewson programmed by Andrew Braybrook.

**USER FRIENDLY (T):** Overworked term which simply means "easy to use".

**USER GROUP (CLUB):** Body of enthusiasts who meet occasionally to swap information and tips relating to their particular machine. Local groups usually exist for all mainstream machines, and – nationally – there are groups for just about every computer ever made.

**USER NUMBER (T):** Some operating systems such as CP/M split a disk into several user areas. On the PCW, for example, you can work in 16 areas with user areas numbered 0 to 15.

**US GOLD (CO):** Founded in 1984, the company – as the name suggests – was originally set up to import American games, including *Beach Head*, *Leaderboard* and the Epyx *Games* series. One of the largest software houses in the UK, US Gold now produces original product and coin-op conversions as well.

**UTILITY (T):** A program that helps in the use or running of other programs – such as disk copiers, de-buggers, programs which convert data from one format to another etc.

• Games: Winter Edition from US Gold's Epyx series of sports sims

# V

**VAPOURWARE (T):** Much-hyped software advertised in advance of general release – and which persistently fails to appear.

**VAX (C):** A designation for large, mini-computer systems made by DEC (Digital Equipment Corporation), one of the chief manufacturers in the world of computer hardware.

**VDU (T):** Visual Display Unit. The term is generally used to describe computer monitors and terminals as a whole.

• Computer monitors are popularly known as VDUs

**VERMINATOR (G):** Possibly the definitive piece of vapourware. A Rainbird project that was "near completion" in January 1988 but has still yet to appear. See ***vapourware***.

**VIDEO DIGITISER (T):** Software which converts video images into a form which can be understood and manipulated by computers.

**VIDEO DISC (T):** Optical storage medium principally used in interactive applications like education, training and information services. Best known from the schools' *Domesday* project and more recently Virgin's *North Polar Expedition* package. Each 12" disc can store up to 250Mb of moving pictures, still frames, text and audio.

• Video discs offer huge storage capacity, making them suitable for applications requiring large numbers of pictures or animation frames

**VIRGIN (CO):** Corporate umbrella for Virgin Games, Virgin Games Centres, Mastertronic and Leisure Genius. Also responsible for the Sega console in the UK. ➤

Key: C - computer Co - company DB - database DTP - desktop publishing G - game GG - game genre Gr - graphics Int - integrated software L - languages OS - operating system P - personalities SS - spreadsheets T - tech spec WP - word processor

**VIGLEN (CO):** Low cost PC manufacturer. The first company to ship a PC with built-in read/write optical disk drive.

**VIRUS (G):** A game which began life as *Zarch*, and was originally commissioned to demonstrate the formidable abilities of Acorn's Archimedes. The game proved so impressive that 16-bit versions were produced under the name *Virus* for the ST and Amiga. A PC version has just been released.

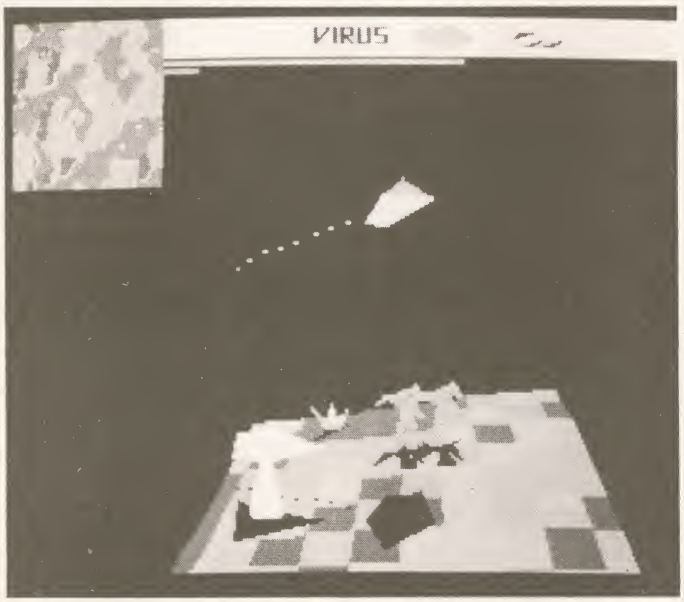
**VIRUS (T):** Destructive program designed to be "spread" from computer to computer, destroying data or having other unwanted effects as it goes. It propagates by copying itself surreptitiously from disk to memory and thence to other disks and after it has made enough copies of itself it then does something such as wipe the data or blank the screen.

Viruses are usually written by programmers with a grudge or simply out to make mischief. They mainly affect business, military and medical PCs, where they can destroy valuable data – but a number of 'home grown' viruses are also doing the rounds on 16-bit machines.

There are many virus-busting programs available though the problem is rather exaggerated by the media.

**VISICALC (SS):** The first electronic spreadsheet package, developed for the Apple micros in the late 1970s. Pioneered the "grid" concept later used by *SuperCalc*, *Lotus 1-2-3* and their clones.

**VLSI (T):** Abbreviation for Very Large Scale Integration. Applied to silicon chips which contain hundreds of thousands of components. Most home computer chips employ VLSI.

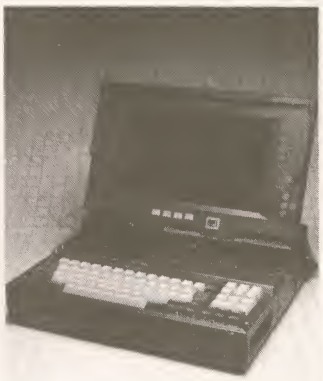



• Virus on the PC: Originally called Zarch, the game was designed to demonstrate the prowess of the Archimedes

**WANG (CO):** Originally a manufacturer of dedicated word processing machines, the company has moved into the networked mini-mainframe market.

**WARM BOOT (T):** A full reset which reboots the machine from scratch without actually requiring that the power be turned off.

**WATFORD ELECTRONICS (CO):** Huge mail-order and retail concern in the PC and Acorn markets. Started out shipping electronic components from a bedroom in Watford. Now boasts its own respected "Aries" PC range.



• Watford Electronics now sells its own range of PCs

**WEIRD DREAMS (G):** Bizarre, surreal puzzle-solving game from Rainbird made famous by being featured on Saturday morning's *Get Fresh* programme. Graphically excellent, it nevertheless scores more as an accomplished demo rather than a serious game.

**WILD CARD (T):** Suffix used to denote a series of file types or similar documents when arranging directories. For example, a series of text files could be copied with one command by typing COPY *.TXT (where the * character is the "wild card" .

**WINCHESTER (T):** Early term for hard disks. The original hard disk was developed by IBM in Winchester, America, hence the name.

**WINDOW (T):** Rectangular area of the computer display set aside to display certain messages or information. The Atari ST, Commodore Amiga and Apple Macintosh use a windowing system, which is considered easier to understand – as opposed to the traditional "command line" display used by most 8-bit micros and PC-compatibles.

**WIZBALL (G):** Excellent Ocean release from 1987 which sees you controlling a bouncing ball in a quest to fill a cauldron with colour. Written by Sensible Software – creator of the *Shoot-'Em-Up Construction Kit – Wizball* is highly original, technically accomplished and reckoned to be one of the best shoot-'em-ups on the Commodore 64.

**WORDPERFECT (CO):** American corporation renowned mainly for its WordPerfect word processing package for the PC.

**WORD PROCESSOR (T):** A program which allows the on-screen manipulation of text, allowing editing and cut and paste abilities and basic page layout.

**WORDSTAR (WP):** Archetypal (and archaic) word processing package for the PC. Now into its fourth incarnation, it has become an industry standard largely through omnipresence rather than performance.

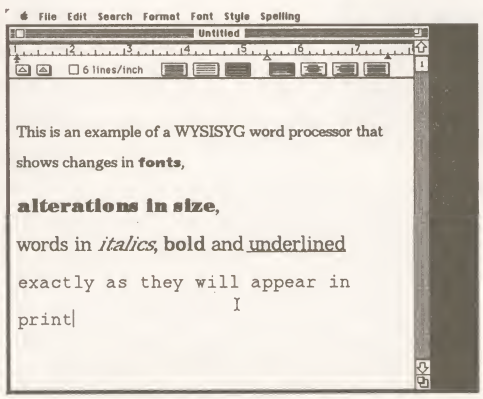
**WORKBENCH (T):** Commodore Amiga's user interface. Combines both a WIMP environment and the more traditional command line interface. Highly complicated and not generally reckoned to be easy to use.

**WORKSTATION (C):** High-specification mini-computer usually configured for one particular application – for example the Sun Workstation, dedicated to graphics.

**WORM (T):** Write Once Read Many. Optical data storage system used by major financial institutions or health authorities, for example. Useful for storing large quantities of information which can then be accessed at will. New as the technology is, it seems certain to be rendered obsolete by current advances in read/write optical disk manufacture.

**WORM (T):** The word 'worm' is also used to denote a virus-like program that mainly affects networks, 'worming' its way through data files and altering or destroying them.

**WRITE-PROTECT (T):** A system whereby floppy disks can be protected from accidental erasure or overwriting. A small tab on the disk can be set to prevent the computer's drive writing any information to the disk, without affecting its ability to read *from* the disk. Typical applications would be where a disk contains software only, or where the disk contains data which is seldom updated but regularly accessed.


File Edit Search Format Font Style Spelling
Untitled
6 lines/inch
This is an example of a WYSISYG word processor that
shows changes in fonts,
alterations in size,
words in italics, bold and underlined
exactly as they will appear in
print

• MacWrite, on the Apple Macintosh is a "WYSIWYG" word processor

**WYSIWYG (T):** What You See Is What You Get. Term used to describe the ability of certain word processing and desk top publishing packages to display on screen an accurate representation of the final print-out. A WISYWYG word processor will display italics and bold text as it will finally appear, rather than as a series of embedded codes for the printer to act on.

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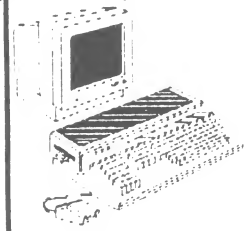

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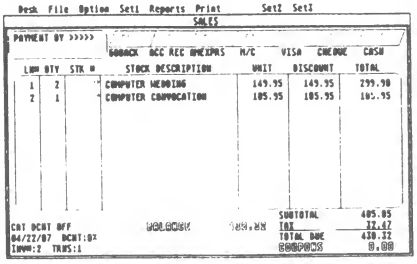
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# IF THE

• E-FITs can produce 2 million billion-alarmingly realistic faces. At the touch of a key you can age the face through fifty years and watch its features fall into place. Collected from video cameras, the features are based on those of real volunteers.

*E-FIT* and *Compusketch* are two packages being tested by Britain's 43 police authorities for use in crime identification. Whilst E-FIT takes off where the old "Photofit" left off, *Compusketch* is largely designed to replace artists' impressions. Both use sophisticated screen manipulation and paint package features, both enable the police to build up a convincing "type-likeness" of unknown offenders. But both use fundamentally different databases.

## Fitting the Bill

Since 1972, the Photofit system has been at the forefront of identifying suspects. Photofit comprises a catalogue of component facial features from actual photographs. Each part of a face is numbered and a witness is able to peruse this stock of features and build up a composite face who's parts are then placed in a plate-glass grid for press releases.

Photofit has all but replaced Identikit which, along with artists' impressions, used to form the bulwark of identification techniques. Identikit is a similar part-by-part system but based on drawings of features on acetate strips which are overlaid to produce a composite image.

In psychological terms, both systems are fatally flawed - research shows that presenting a witness with pages of disembodied features adversely affects their memory of the offender's face. In addition, both Identikit and Photofit produce disjointed "jigsaw" images of faces where the lines dividing feature areas are almost as prominent as the features themselves.

Photofit is more realistic in that it's based on photographic images, but it relies on an inflexible fixed database. It typically supplies a total of around 1,000 component facial parts - 288 foreheads and ears, 177 pairs of eyes, 163 different mouths, 85 chins and so on. However, one could say Photofit fits the bill for the Bill. Despite its inadequacies, it still delivers a maximum of 9, 081, 979, 200 possible face compositions. 9 billion? That's nothing. With E-FIT you're talking 2 million billion!

## It's a fit-up

The Electronic Facial Identification Technique, or E-FIT, is a hardware/software system which cost the Home Office £100,000 to develop over ten years. In April 1988, Io Research, the supplier of E-FIT's graphics boards, was contracted to complete and market the system. The current database of features, collected by video camera from volunteers and broken down into nine com-

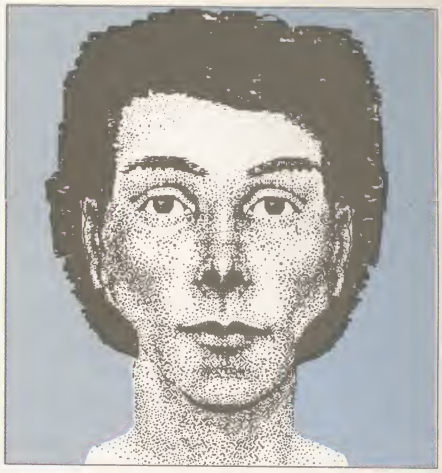
## Logging the memory

**Deriving an accurate picture from a mental image is beset with difficulty, since in most cases a witness may have been under extreme stress at the point of observation. Memory is a fragile thing and easily destroyed, so police methodology is based around letting the witness do the talking and avoiding auto-suggestion. An interview will begin with an identification officer listening and taking notes for a long while before a recognition system is brought to bear. The process may take up to four hours - any longer is known to be counter-productive. Typically the job takes two hours.**

**But, interestingly, photo-realism is a quality police authorities don't necessarily require. An image printed in a newspaper or shown on TV can't be too realistic or else members of the public won't phone in with as many possible suspects. The point is that the police are after resemblance not realism. If you see an incredibly realistic photo of a suspect you might think it can't be the person you suspect because he doesn't look exactly like the face in the photo! Realism can be counter-productive. E-FIT's probably about as close to that edge as is useful for intelligence purposes.**

# E FACE FITS

*Even if you suspected your own mother of being a mass murderer, you'd have a hard job describing her exact features to the police without the aid of photos. Andy Storer, who often has difficulty recognising his own face in a mirror, takes a look at two new systems designed to fit the face to the felon…*



This Compusketch image took 90 minutes to produce and a great deal of liason between operator and 'witness'. Another couple of hours would have produced an even more life-like resemblance of its subject.

ponents, comprises 1,140 parts. At present these only represent the features of white males between the ages of 15 and 60, but women and ethnic groups will be added in September.

E-FIT generates images of near-photographic quality, output as 128 grey level, 768x288 pixel screens. An operator enters descriptions into the system using everyday terms - say short, dark hair with long oval face and double chin. E-FIT then searches its database for matches, and informs the operator of the number of possible features it has found. After a witness has supplied a full face description, E-FIT presents a composite screen image which may then be mixed and manipulated. After a witness's re-description, individual features may be altered whilst the rest of the face remains in place. Feature editing includes positions, tones, size and colouration - additional accessories such as scars, lines, jewellery, hats and glasses can be added for greater authenticity.

Once an E-FIT has been completed to the witness's satisfaction, it may be moved to a full colour art system, *Designer Paint*, where free-hand alterations may be made using traditional paint package facilities.

Where *Designer Paint* dispenses with the traditional is in the choice of 16.7 million colours it offers and its hard copy output to slides and film at 4000-line resolution. Images can be also be output via modems, videotape and half-tone for newspaper pictures. As if this weren't enough, images may be frame-grabbed and imported into E-FIT – say, to erase all signs of damage from an unknown accident victim or to include whole body images next to a head to show the clothing and build of a suspect.

## Sketchy memories

The other electronic identification system under police field-evaluation is Kodak's *Compusketch*. Although forces like West Yorkshire are already using the portable package and showing its images on YTV's *Crime Stopper* programme – and Humberside has 4 on order – West Midlands is still pondering a purchase.

*Compusketch* operates in an IBM Windows environment and is designed to run on portable PCs. As such, the system is ideally suited to interviewing witnesses out in the field or in the comfort of their own homes. An operator works through a whole host of questions about the features of a suspect, which are offered as multiple choice questions beginning with the generalities of face shape and hair and moving to the specifics of noses and chins. After each area has been covered, the system backtracks through inputs and repeats any subjects that haven't been quantified. The process is supplemented with a catalogue of examples to overcome the difficulty and inadequacies of language.

Once data has been satisfactorily processed,

*Compusketch* produces a full-face image which may then be treated to its constituent painting program; *PC Paintbrush*.

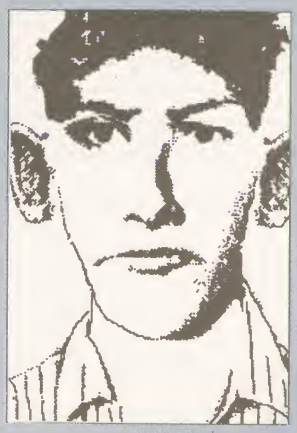
At this point the image may be edited, drawing on a range of on-board feature components which can be eased into position or switched at will. Once the image begins to near recognition, to become a type-likeness, the operator can incorporate paint facilities - touching up areas of the face for greater precision. Although, on portables, the resultant image is in mono, *Compusketch* is in fact a colour system enabling painting to include alterations to skin tone changes, for example. The entire process of making a good type-likeness will take on average something like 90 minutes of interaction between operator and witness.

Again, images can be faxed, modemed or output to video. ●

## On the lighter side

***Fun Face*** **from Cavendish on 01-323-4761 is a package for the ST originally intended as a replacement for Identikit. It combines a similar database of features such as foreheads, hair, eyebrows, eyes and mouths to those found in E-FIT and *Compusketch* but ignores the serious input of detailed description. As such, you're left with the pleasure of composing faces from a possible maximum of 5, 576, 787, 923, 200,000 combinations!**

***Fun Face*** **also includes drawing facilities like pattern fills, outlining and etching, along with a choice of options to squeeze, flatten and shade faces to any form you like. Faces can be saved to disk, imported into paint packages in half a dozen formats and printed out to 9 and 24-pin, laser and Postscript printers. The resultant images could be imported into DTP packages or games creators.**



**At £39, *Fun Face* is a tad cheaper than E-FIT at £25,000, and obviously a lot more fun. But then humour's the last thing E-FIT's designed to provide.**

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# ST

## Compile and away

We've been waiting for the new GFA compiler for months now, and at last GFA has let it loose. It's main task is to compile *GFA Basic 3* programs, which use more instructions than those available in *GFA 2*. I thought the new compiler would be like the old one, with support for the extra commands, but it's actually very different.

In terms of looks alone, it now has a GEM front end with pull-down menus giving you access to compiler, linker and shell programs. The option to link in C code with or without libraries is sure to appeal to some but I was amazemed principally up by the sheer speed of a compiled program.

I obtained a copy of the compiler and tested it out on a few simple BASIC programs just to get some speed figures. Mathematical operations seem to have changed very little but there are enormous improvements in FOR-NEXT loops and such-like. A FOR-NEXT from 1-100000 can be executed in *GFA Basic 3* and takes 2.67s. If this is compiled in GFA's earlier compiler it gives a result of 1.71s. When the *GFA 3* version was compiled execution time was just 0.78s.

A loop involving movement of areas of the screen took 21.77s when compiled using GFA's earlier compiler and 21.21s using the new one. The results show that *GFA 3* doesn't lend enormous speed to everything but on the whole most instructions benefit. Since *GFA 3* permits access to a vast number of GEM and BIOS calls, it really does look like a powerful programming tool.

The compiler is £29.95 which includes a 60-page manual exploring all the compiler options. GFA is on 0734 794941

## Off into hyperspace

*Soft Image and Atari have joined together to produce a new business package called HyperChart. The software is aimed at people interested in turning their ST into a presentation workshop.*

*Hyperchart allows you to create all sorts of 3D graphics such as charts, graphs and pictures. Atari showed me it in action and it's an impressive brute. The first thing that hits you about it is the way that pictures can be manipulated quickly, even allowing you to rotate charts and alter perspective angles. To a limited extent you can create animation scenes to illustrate a point.*

*Best of all, the program isn't just a slideshow of pictures created in other graphics packages instead there's a whole branching system so it can even be used as a training tool.*

*Being a business package, Hyperchart weighs in at a rather hefty £130 but for that you get a massive manual and an exhaustive number of features. Soft Image can be contacted on 01-409 0103.*

## PC power

PC emulators are few and far between on the ST. Until now there's only really been *PC Ditto*, but since that's software-based there's an inevitable reduction in speed and some trouble with compatibility. The future of *PC Ditto* seems questionable after its American publishers Avant Garde recently went bust.

However, Cavendish has brought out an emulator called *PC Speed* which is hardware-based and can run faster than some PCs. It fits inside any ST and sits on top of the 68000 processor. It's crammed onto a 9.5 x 9.5cm board containing little more than a Nec V30 processor, and offers four times the speed of a standard 4.77 MHz-rated XT PC. It guarantees to run all MS-DOS software and popular PC packages such as *Wordstar* and *Pagemaker* without a hitch.

With the hardware installed, an accompanying piece of software must be executed to bring *PC Speed* into operation. It has direct access to RAM via the system bus so requires no RAM to run and suffers no loss in speed.

The parallel and serial ports are supported and you can even use a PC mouse. External 3.5" and 5.25" drives and DMA hard drives may also be added. Hard drives, however, require a whole disk partition to be set aside exclusively for PC software.

On the memory side of things, there's 704K of RAM, which is 64K more than an XT. Combine this with emulation of the CGA and Hercules graphic cards and you have one of the best PC emulators to date.

All of these features come at a price – £379. *PC Speed* is from Cavendish, which is on 01-323 4761.

There's another version of *PC Speed* due for Christmas. This is capable of AT processing speeds and seems likely to include a 16 MHz processor.

## Indy action

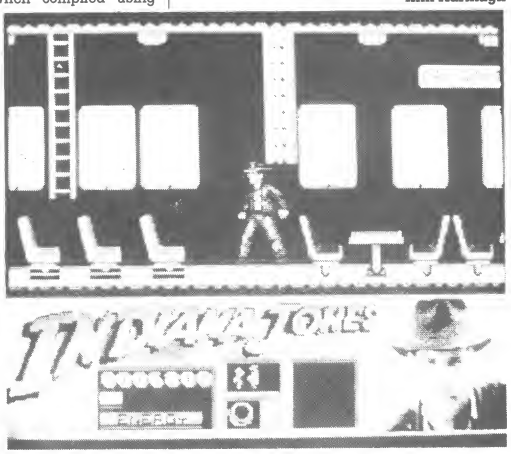
Keep an eye out for US Gold's new Indiana Jones game – the action version. US Gold isn't exactly renowned for producing very good games in the 16-bit market, but *The Last Crusade* is an exception.

I was surprised by the size of the sprites and the game has some good scrolling. It's a platform game split into four levels – one of which is set inside the flying Zeppelin. Whilst you're wandering around here dealing with German soldiers, the screen display bounces up and down, shifting to one side, giving a good impression of motion.

The game is surprisingly closely linked to the film and the graphics are brilliant. It's one of the best platform games I've seen.

It's much more of a test of your joystick skills than something like *Thunderbirds* and seems to indicate that US Gold might finally be trying to serve the 16-bit scene sensibly.

**Kim Harmagh**

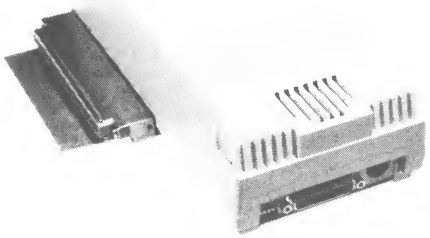


• Indy makes a bid for success in the Zeppelin

# AMIGA BLIT

## Hard times ahead?

The A590 hard drive is a pleasantly compact little plug-in unit that provides an autoboot compatible 20Mb hard drive (you'll need *Kickstart 1.3* to take advantage of this however), an external SCSI (pronouced scuzzy) connector (for connecting CD ROMS, additional hard drives and other such expensive gear) and an unpopulated 2Mb RAM expansion for the very acceptable price of £445.



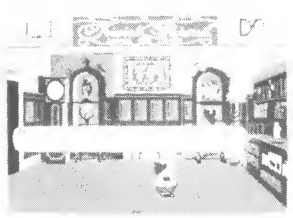
• A590 hard drive for the Amiga

Although the unit is not the cheapest around, the addition of a RAM expansion and SCSI more than makes up for the higher price. The A590 is also a lot faster than any other budget hard drives currently available – in tests, 8 out of 10... er, in tests, a program such as *Deluxe Paint 3* loaded in just under 2 seconds. That's fast matey!

For the definitive review of Commodore's latest techno-baby, check out the new issue of *Amiga Format* (issue #2) which also includes a fully playable demo of Virgin/Mastertronic's classy arcade conversion, *Gemini Wing*, on the cover disk.

## Trivial matter

That famous boardgame *Trivial Pursuit* is at last out on the Amiga, courtesy of Domark. Now all us Amiga owners can get to play the game that went out two years ago...



• Trivial Pursuit: Not exactly state-of-the-art

## Pro-24 update

The release of Steinberg's highly regarded ST sequencer, *Pro-24 III*, is almost upon us. Evenlode Soundworks, the official UK distributorsof all Steinberg's products, demonstrated both *Pro-24* and the educational version of the program, *Pro-24E*, at Commodore's recent education conference, held at the Barbican in London.

Chances are, *Pro-24* will sell on the name alone, but any musicians who are serious about their software would probably be best advised to take a look at Microlllusions' *Music-X* before handing over any cash.

If Steinberg really want to impress Amiga musicians, it would have been best advised to have forgotten all about *Pro-24* and produced instead an Amiga version of its latest sequencer, *Cubase*. As it is, *Pro-24* is a very old program and is no competition to the 250-track *Music-X* (which incidentally happens also to be £20 cheaper!).

## 1.3 tricks

Although Commodore doesn't advertise the fact, *Workbench 1.3* includes a virus checker/killer, but it isn't as easy to track down as you would think (that is, of course, unless you've read the enhancer pack manual from cover to cover!). The virus checker/killer is actually built into the AmigaDOS 'Install' command.

From the CLI, checking and killing a virus with Install is simple. The first thing you must do is to check to make sure that the disk that you are about to install does indeed contain a suspect bootblock. To do this, you would type:- INSTALL DF1: CHECK (if you only have a single drive Amiga you must first type in INSTALL ? and then when you are prompted to type in the arguments, remove your *Workbench* disk, replace it with the disk to be check and type DF0: CHECK and press Return. Depending on the state on the boot block, Install will either say "Appears to be normal V1.2/V1.3 bootblock" or "May notbe standard V1.2/V1.3 bootblock". If Install does return the latter, then it is always best to be safe rather than sorry by removing the suspect-boot block by typing INSTALL DF1: (once again, single drive users will have to use the INSTALL ? technique as detailed above).

## As easy as ABC...

American publisher Abacus has brought out another computer title. *Amiga C for Advanced Programmers* is a little heavy for bedtime reading but promises to be a valuable source of reference for those with a technical bent.

## Flying high with Falcon

Time to stop being so techie and start getting on with more important things, such as maintaining peace, justice and the American way – with MirroSoft's *Falcon*.

During the game, if you get badly hit, don't automatically bail out. Instead, swing your fighter around around and head for home. To stay airborne, press 'HELP' and the '+' on the keypad and keep them depressed. The F16 will now stay level and decend at a constant rate. Next, switch to tracking mode and rotate to side view. Just before your plane is about to touch down, pitch up the nose – you will land successfully every time. Finally, select end mission and you will be rescued even if you are in enemy territory.

Thanks toVark for that tip.

**Jason Holborn**

## Message Port

*If you have any views on any issues raised within AmigaBLIT, or in fact the Amiga scene in general, then why not get them off your chest by putting pen to paper and sending them to me.*

*Similarly, if you have any great tips or hints that will make using the Amiga a lot more fun,then why not send them in also. Send your letters to: JASON HOLBORN, AMIGABLIT, 4 QUEEN STREET, BATH BA1 1EJ.*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# PC UPDATE

## Switched off

If you share your printer with other PCs, either through a network or via an electronic printer switch, you may have encountered problems in printing through GEM's *Output* application. When the application is asked to print a file, it first checks you have a printer switched on and on-line. If you are using an electronic switch which poles several incoming data lines, it may be poling a line other than the one GEM's checking.

If this is so, GEM will come back with an Alert Box saying that your printer is not responding. If this has happened to you, it's worth clicking on the Retry option a few times until you happen to catch the printer switch while it's looking at the right line. Once GEM has made the switch latch to its data line, it will print your file without further trouble.

## MUXing about

*If you're an avid reader of this column (perhaps I could buy you a drink some time), you'll remember I made brief mention of the MUX card, which can be used to add an extra drive to an existing twin-floppy PC. This is harder than you might think, as DOS often refuses to recognise more than two floppies, and even if it does, will only consider certain types of drive as valid extras.*

*The MUX card gets round this problem by multiplexing the extra drive and fooling DOS into believing that it's still dealing with one of the two "legal" drives. All this work is done transparently so, with the card in situ, you can run an extra drive internally or externally and refer to it by your chosen logical drive letter – F: on my system.*

*The half-length card fits any 8-bit slot in your machine, the floppy drive cable for your regular drives plugs into the MUX card and a jumper cable goes from the MUX to the floppy controller. The extra drive is taken from another multi-pin connector on the MUX card. The card is controlled by a device driver which you load from your CONFIG.SYS file and Bob's your uncle. The software can auto-detect a number of different 3.5" formats, including Apricot, HP and Atari ST, so it could serve a double purpose for transferring data.*

*The MUX card and 3Five software is available from Datamation services for £43.70. Ring them on (06285) 28326.*

## Diverse drivers

One problem often far underestimated when buying a printer is getting your software to talk to it. The means of communication between the two is governed by a printer *driver* which ensures that when you mark a word in your word processor as **bold** your printer gets to know about it and does indeed print it emboldened. With the old stagers of the printer world, which are compatible with an Epson FX80, Qume Sprint or HP LaserJet, you can be pretty certain that all your software will have options to install compatible drivers.

When it comes to the more esoteric printers, particularly those that can produce colour output, you'll find things are quite different. Drivers become much more crucial with these printers, as the printers' special features count for nothing if your software doesn't know about them.

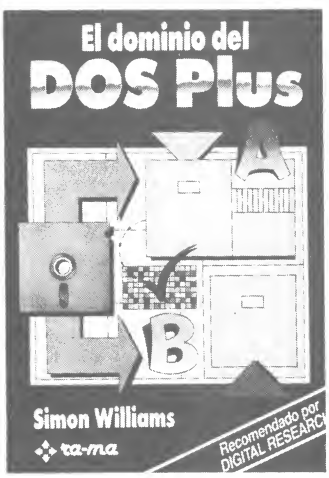
In an effort to make sure this doesn't happen with Epson printers, the company has embarked on an exercise to write its own drivers for the top 20 software packages in the country, and to make them available to their manufacturers, and possibly in the public domain. This is intended to ensure that Epson printers at least will be compatible with most of the major applications – a very laudable effort.

On the subject Epson, it's worth mentioning that its current mid-range 24-pin printer, the LQ-860, is a very fine beast, with all the features of the 850, but a redesigned casing which improves the ergonomics considerably. Each of the top covers hinges up and can be locked in the open position, much like a car bonnet. They can also all be removed in the normal way. When hinged up they provide excellent access to the working parts of the printer.

Unlike previous Epson printers, the LQ-860 mounts a cartridge ribbon around its print head, in the style of most other modern printers. If you want to print in colour on the machine, all that's required is to change the black ribbon for a multi-colour one, and use the appropriate driver.

## Just what the DR ordered

Over recent months there's been a lot in the computer press about DR DOS, Digital Research's answer to MS-DOS 4. It is said to have full compatibility with the Microsoft product and a much more friendly user interface. It's also being bundled with several PC clones currently on the market.




**• The Spanish version of the blockbusting best-seller, Mastering DOS Plus. Went down a bomb in Barcelona**

I've no practical knowledge of DR DOS (perhaps Digital would like to oblige) but hope it's a good deal more compatible than its earlier attempt at MS-DOS compatibility, DOS Plus. DOS Plus is a product I do know reasonably well, having written a book on it (*Does this follow? – Ed*) and the compatibility of that product was so good Amstrad decided it had better bundle MS-DOS with its PC machines after all. And a very wise decision that was – how many people do you know who still use DOS Plus? – no, I've never met him either.

MS-DOS could certainly do with a more friendly cousin, and I wish DR well with its new product. With the problems already caused on PCs by clone BIOSes, clone display adapters and clone drive controllers, though, I am more than a bit suspicious of a clone DOS.

**Simon Williams**

# CPC centre

## Thangyewgoonight!

Ladies and gentlemen, please meet and greet, all the way from a farmhouse in Warwickshire on the Code Masters label, *Rock Star Ate My Hamster!*

It's been a long time coming, but at last the Amstrad version – programming by Colin Jones – is with us. The Darlings have been daring, I'd have thought, in attempting such a "humorous," nay, "wacky" game, for experience has shown that such efforts almost invariably bring on terminal embarrassment at best, and at worst induce an expression to form rapidly on the player's face as if his entire machine had suddenly been reduced to molten plastic by a 500 volt mains surge.

*Rock Star*, it must be said, is a good cut above such travesties. For one thing the estimable ubiquitous and highly literate Mel Croucher has been drafted in to write much of the characterisation and "plot" – so at the very least the spelling is OK. And secondly, the subject is well chosen, for there has never in history been a more egocentric, greedy and posturing yet talentless and unattractive bunch of individuals than those in the rock business. So get that adrenalin going and psyche yourself up for the arrival of Tina Turnoff, Michael Gorge, Meathead and Stiff Pilchard (woo! yeah! thangyew!).

You can guess the format already, no doubt: 50 grand and a band, make it big. Tour or practice? Risk a publicity stunt or record a record?

One minor complaint: no credit! How in Cliff's name would McClaren or ZZT ever have got anywhere if there hadn't been a string of people lining up to throw money at them? Yet in *Rock Star* if you go overbudget that's it, goodnight I love you all you've been a great audience see you next year.

*Rock Star* is a tenner for two cassettes, £15 for the disk version, and is available now.

THE Stun
COMPUTER ENTERTAINMENT SOFTWARE
AN EXCLUSIVE
ALIENS STOLE MY VOLVO!
see page 5
ROCK STAR ATE MY HAMSTER
COLIN JONES
BUBBLES - I'M FOREVER BLOWING!
Monkey Bubbles' nights of baked bean bingeing!
We exclusively reveal today the REAL REASON why mega moneybags rock star WACKY JACKO seals himself in an OXYGEN TENT!

• *Rock Star:* **not cringe-making, which is a surprise**

## More *Exolon* news

Carl Surry of Barnet (and no, I haven't forgotten the mysterious multiple Surry entries for our *Pandora* competition!) writes about the *Exolon* poke featured in *Express* a couple of issues ago. "It would have been easier to have printed the cheat rather than the poke," he says, "especially because many of us don't have the original release but have it as featured on Hewson's *Smash Hits*. So here it is: define keys ZORBA, then redefine them as you wish. Now you have infinite lives, ammunition and grenades."

Cheers Carl: you have, I'm sure, earned the (literally) undying gratitude of many an *Exolon* fan.

And while we're on the subject of cheats, Philip Saunders of Croydon in Surrey writes to offer a poke for Code Masters' recent *Powerboat Simulator*. Hold down Z, X, C and spacebar while playing, then press Escape, 1 and 2 (while still holding down Z, X and C).

## Enter the cowboys

*Domark's Tengen arcade conversion Xybots gets infinite lives courtesy of Manchester pokester Mike Wong. Simply type in this listing; type RUN and use the Enter key (not Return). Then load up the game and away you go, doing your best cowboy-after-a-week-on-a-horse impression. Walk this way...*

```
1' XYBOTS DISC POKE
10 MODE 2:PRINT"Insert ";
20 PRINT"XYBOTS disc..."
30 FOR n=&BE80 TO &BEA9
40 READ a$:a=VAL("&"+a$)
50 POKE n,a:c=c+a:NEXT
60 IF c<>3335 THEN 150
70 CALL &BB18:CALL &BE80
80 DATA 21,8d,be,11,40,00
90 DATA d5,01,1d,00,ed,b0
100 DATA c9,21,00,01,e5,11
110 DATA 00,00,0e,41,df,5a
120 DATA 00,21,53,00,22,05
130 DATA 01,c9,af,32,1f,72
140 DATA c3,b0,04,3c,c0,07
150 PRINT"Error..."
```

*Share your latest hacking exploit with thousands of eager CPCers. Send your infinite lemons poke for* Fruit Machine Simulator *to: Steve Carey's CPC Centre, New Computer Express, 4 Queen St, Bath BA1 1EJ.*

You should now have infinite lives for player 1, player 2 or even both. You'll also have knotted arms, but neither myself nor *New Computer Express* can be held in any way responsible for any injury whatever, however caused, as a result of following these instructions.

## Elite club

Recently I've had some correspondence in *Amstrad Action* (all good newsagents... unbeatable value... August 10th etc) on the subject of that venerable warhorse *Elite*. Now you might have thought that people would be fed up to the back teeth with the darned thing.

But no, one letter in the mag suggesting an *Elite* club where dangerous, elite (and in my case tepid) commanders could get in touch prompted dozens to write in supporting the idea and asking to join. So if you're that way inclined you know where to contact likeminded individuals.

## The search for stock

Simon Williams (no, not the chap who writes this organ's PC column: this Simon's from 24 Chalcot Drive, Hednesford, Staffs WS12 4SF. The other one isn't)... where was I? Oh yes, Simon is starting up a CPC fanzine. And he's looking for artists, programmers and people willing to supply tips, maps, pokes, reviews and other stock for the magazine.

"Don't worry, though," he says: "I'll still keep reading *Amstrad Action* to see how the competition's doing!" Oh cheers Simon, thanks a lot.

By the way, there's a new series just beginning in *Amstrad Action* about Desktop Publishing and all that. You'd be crazy to miss it...

**Steve Carey**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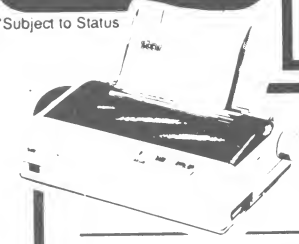

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# SPEX

## Circuit training

Is yours still the only household in your street without a Spectrum circuit diagram, despite the many possible sources suggested in this column?

I've received some bumph on a program which could be for you. *Electrodraw* by BESofT is a "very versatile program for drawing, editing, storing and printing electronics circuit diagrams". Features include user-definable symbols as well as magnify and box drawing facilities.

Sample diagrams seem to suggest the bumph's fairly accurate, and all real circuit diagram fans will want a copy. An SAE will get you more details, and if you're convinced prices are £17.50 for the cassette version and £19 for microdrive. BESofT is at **20 Ashville Road, Leytonstone, London E11 4DT.**

## BASICally good

MGT has just dropped some more Coupe information in my letter box which I feel obliged to share. It concerns the machine's BASIC, which has been written by Dr Andy Wright, the author of the highly acclaimed *Beta BASIC*, an extended BASIC package that still enjoys a healthy level of popularity and its own user group.

*SAM BASIC* should be even more popular amongst users, as it seems like a powerful implementation that will have no trouble capitalising on the Coupe's graphic and sound capabilities.

As well as simple improvements to beloved *Sinclair BASIC*, circles can now draw off screen for instance, lots of brand new commands have been included in the language. Two impressive newcomers are RECORD, which stores a series of graphic commands, and BLITZ, which replays them very speedily to the astonishment of onlookers. There's also FILL, PALETTE (which handles the Coupe's wider range of colours), a much enhanced SCROLL (moves entire screen in any of four directions, ROLL (like SCROLL but picture wraps around) and GRAB (stores screen area).

• Dr Andy Wright discusses the SAM Coupe BASIC with Bruce Gordon

Of course all this will run at a speed which makes your Speccy (no slouch for an 8-bit) look about as fast as continental drift. With a built-in language that seems this good I'm confident that the Coupe will continue the Sepctrum's tradition as a BASIC tutor and amateur programmers' machine.

MGT also seems keen to continue its sterling work in the field of Specturm perephials. Latest product is an external 3.5" disk drive for the Plus 3. More news when I have it.

## Pokes galore

*Here's the largest collection of pokes this side of, er, somewhere where there are lots of pokes.*

*They were lugged onto my desk by Jon Rose, Co-Editor of the 128 users fanzine Enigma and a person who specialises in mercilessly hacking the 128 versions of games to bits, as you will see. To get the benefit of immortality and the like you'll need a Speccy with 128K of memory and a Multiface or similar gadget to install 'em.*

- *Dragon Ninga 128*
  *38918,0 – Infinite Lives*
- *Sanxion 128*
  *36551,0 – Infinite Lives*
- *Stormlord 128 (Stormlord pokes only work if you have a go first)*
  *35920,0 – Invincible unless you use a spring board*
  *34657,X – X = Number of lives*
  *37716,0 – No volcanoes*
- *Typhoon 128*
  *41664,0 – Infinite Lives*
- *Moonstrike 128*
  *42205,0 – Infinite Lives*
- *Vindicator 128 (Imagine)*

*Part One:*
*33335,0 – Infinite Lives*
*33275,0 – Invincible*
*Part Two:*
*34121,0 – Infinite Lives (Raid one)*
*34057,0 – Infinite Lives (Raid two)*
*38625,0 – Infinite Rockets/Grenades*
*Part Three:*
*34208,0 – Infinite Time*
*34899,0 – Infinite Lives*

*As the applause for Jon Rose dies down I thought I'd repeat my plea for more hints, pokes and cheats. Throw everything you've discovered in an envelope and address it to Robin Alway, SPEX, New Computer Express, 4 Queen Street, Bath BA1 1EJ. Remember folks, the best material receives a free game!*

## Hot compilation

Ye olde custom of churning out compilations seems to be something software houses like to do in summer as well as the more traditional Christmas season.

Even as we speak, the shelves of your local software emporium are probably straining under the weight of their glossy cardboard boxes.

Also likely to be straining is your brain is deciding which one to buy. My own personal choice is Hewson's *Heatwave* pack, which includes some of the best Speccy games seen in the past few years: *Nebulus, Impossaball, Netherworld, Ranarama, Zynaps* and *Firelord*. The worst on the pack is surprisingly the latest one to be released, *Netherworld*, although it's still by no means a turkey.

Perhaps the most appealing aspect of this compilation – as opposed to the other 65 about at the moment – is that it's totally devoid of coin-op conversions, celebrity endorsements or film licenses, and the games offer playability rather than digitised pictures of Jim Bowen or whoever.

There's a good mix of different game types, too, with out and out blaster *Zynaps*, complex arcade adventure *Firelord* and brilliant unclassifiables like *Nebulus* and *Impossaball*. If you haven't already got more than half on them under the bed, purchase is strongly recommended. Sell the guinea pigs if necessary!

**Robin Alway**

# SECTOR 64 SECTOR

## Contributions

If you have any wicked cheats for games, send them into *Sector 64* along with any comments, tips or even listings. Write to **Sector 64, New Computer Express, 4 Queen Street, Bath BA1 1EJ.**

## Quiz time

See if you can answer the questions below (The first three correct answers to be sent in will win a full disk or tape of amazing demos. We'll print the winners at a later date):

**1** If you expanded C16 to 64K, could you load '64' games on it?

**2** Did K-Tel ever make computer games?

**3** How many MHz does the C64 run at?

**4** Is the 1541 disk drive reckoned to be fast or slow?

Send answers to the normal address, and don't forget to specify disk or tape.

## New releases

Here are a few new releases you can be getting tucked into:

- Hostages, from Gremlin
- Xybots, the mega multi-player game from US Gold
- Red Heat, which brings Arnie back to the 64 once more (he's becoming quite a sprite)
- And of course Grandslam, with the wonderful Thunderbirds

**Ian + Mic**

## Colour it up

*This week's listing comes from Nigel Myers, who has contributed to Sector 64 before. Nigel's listing is a TV colour bar routine similar to a horizontal TV test bar.*

*In line 140 you can change the colours of the bars. Type the program in correctly, and it'll run. If not, it has a program checker.*

*Line 130 contains the Y co-ordinates to each bar, but it will glitch if you change them.*

*After the BASIC loader has finished, the machine code program lies at 49152 in memory, so you can run it at any time you wish even when the BASIC program is not there by typing SYS 49152.*

```
1   REM TV COLOUR BARS
2   REM BY NIGEL MYERS
3   REM FOR "SECTOR 64"
10  C=0:FORA=49152TO49228:READD: POKEA,D
20  C=C+D:NEXTA
30  IFC<>8551THENPRINT"DATA ERROR !":END
40  SYS49152
45  REM POKE 49194,173 (NORMAL SCREEN)
    OR POKE 49194,141 (COLOURED SCREEN)
46  REM IF BORDER 'JITTERS' TRY
    THIS..FORR=0TO4:POKE56325,50:POKE563
    25,17:NEXT
50  DATA 120,169,18,141,20,3,169, 192
60  DATA 141,21,3,88,169,17,141,5
70  DATA 220,96,173,14,220,41,254, 141
80  DATA 14,220,162,0,173,18,208, 221
90  DATA 61,192,48,248,189,69,192, 141
100 DATA 32,208,141,33,208,232,224,8
110  DATA 208,234,173,14,220,9,1,141
120  DATA 14,220,76,49,234
125  REM RASTER POSITIONS..
130  DATA 27,59,91,123,155,187,219,251
135  REM BORDER/SCREEN COLOURS..
140  DATA 1,7,3,5,4,2,6,0
```

# ARCHIMEDES LORE

## Out of the crowd

The BBC Acorn User Show at Alexandra Palace was very well attended. Having been there during the Press preview I was all geared up to right about the "wide open spaces" between the stands. Half an hour later it was getting very difficult to move.

- Some of the most interesting things, not covered by my mate Simon Williams in his show report, included new products from **Electromusic Research** (0702) 335747.

The company's music software/hardware sets out to do for the Archie what it has already done for many other home micros, and includes synths, MIDI interfaces and samplers for the machine. As often happens at EMR stands, Mike Beecher's "anyone-could-do-this" demos effectively stopped the normal flow of visitors.

The excellently named **Armadillo Systems** (0572) 822499, also had a MIDI-based sound sampler available and I'd be interested to draw comparisons between the two.

- **BeeBuG** is pumping out a whole new range of hardware and software products, including its own DTP system (which brings the count to five), two scanners, a C compiler and a hard disk back-up utility. It's also offering a good range of finance deals on Archies, if you're stuck for cash.
- Incidentally, if anyone found an odd selection of keys on a broken keyring in the exhibition hall, I'd be ever so grateful if you could send them to the *Express* offices. All costs will, of course, be refunded.

## The shows must go on

*Despite all the unjustified stick the Beeb got with its last TV offering on computers, it's determined to try again and there are a number of new series scheduled for the Autumn – no firm dates yet.*

*Into Print, the DTP show, is due for a new run, as is* The Electric Avenue. *A new edition of* The Software Show *is also on the stocks and a documentary, called* Imagina *will look at the variety of home uses of micros.*

## Scaleable fonts

Overshadowed by the official release of the A3000 was the launch of Acorn's own DTP system, which is an extended rewrite of the *Timeworks DTP*. It runs (just) on a 1Mb Archie, but really needs rather more than this, particularly if you want to multitask it with a drawing package. It is the first vehicle to make use of Acorn's rescaleable fonts, however, which should be a major step forward in the quality of both display and printer output.

I haven't had the chance to look at these fonts yet, but hope to soon. They offer the potential of PostScript-style output with Archie-style speed. They don't rely on a comparatively slow PostScript interpreter to calculate the scale change for large or small fonts, which should give the Archie another edge over rival DTP and w/p systems.

**Bertrum Carrot**


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# PCW PATCH

## Bug standard

After using *Mini Office Professional Plus*, the upgrade to *Mini Office* with spell checker and thesaurus, I can say... it's very disappointing. There are several bugs: the database won't load ASCII files, the spell checker won't load *LocoScript 2* files, the anagram and crossword utilities dump you out to CP/M when you try to stop...

The worst thing is not the bugs, which will eventually be put right, but the time it takes to use the two new utilities.

While editing a document, you press [f2] to spell check: simple, you think. But no, a message comes up telling you to save the document and exit to the main menu. You can't spell check a document from inside *Mini Office*!

So you save, exit and spell check. The spell checker takes ages – five or six times longer than *LocoSpell* or *Protext* – and to look up suggested replacements of doubtful words takes, on average, a whole minute. Then the damn thing insists on saving the spell corrected document on the program disc it insists you put in the A drive, or else the thesaurus it insists you put in the B drive.

The thesaurus is reasonable – except that all the words are spelt the American way and it takes so long to call it up and use it (you can't use it from inside a *Mini Office* document, of course) that you'd be far better off with a book.

I hate putting software down, but really this is a case of dreadful program design. A spell checker that doesn't work from inside the program it complements is useless; a thesaurus that similarly can't be used while you're actually writing is a waste of time.

*Mini Office* is a very good package, exceptional value for money and well worth recommending to any club secretary, small business person or just someone who wants to organise their household affairs. You can pick it up for £18 from some mail order houses. But the upgrade, with a standard price of £49.95, is just a waste of money. Buy the old version and get a good fast and reliable spell checker like *Protext* or *LocoSpell*, get a thesaurus from your local paperback bookshop, and spend the difference on a drink or two.

### Competition winner!

*The winner of a brand new copy of LocoFile, the database add-on for LocoScript, in the recent PCW Patch competition was Owen Brooks of Lutterworth in Leicestershire. Well done – your prize is on its way.*

## Prize booty

To put a comment in a PROFILE.SUB file, preface your line with a semi-colon, and CP/M will ignore it, for example

**;Turn disk over and continue**

**Basil Pigg**

# QL corner

## Minerva

Stuart McKnight (of Atavachron fame), with some other people, is developing a new version of QDOS, rejoicing in the name of Minerva, to be supplied as a couple of EPROMs on a small circuit board.

Minerva will have as many of the existing bugs removed as possible, and full access to the second screen – useful for animation. The various graphics and mathematical routines will be enhanced, and it is hoped that it will be possible to run multiple copies of *SuperBASIC* – allowing multitasking of BASIC programs. I seem to remember Sinclair promising this when the QL was launched.

If, as appears to be the case, Minerva is based upon a disassembly of the existing firmware, it could be jumped on very heavily by Amstrad, as it might be considered to infringe the company's copyright. However, as all prospective customers will already have purchased a copy of QDOS with their QLs, I don't think that Amstrad will be all that concerned about it.

If you have a modem, and you would like to keep up with the latest news about Minerva, keep an eye on Tony Firshman's QBox CBBs, on 01-706 2379 (1200/75 baud – V21, 300/300 baud – V23). QBox has quite a lot of things "QLish" on it – well worth a look.

### Astracom modem

*There should soon be a 2400/2400 baud upgrade for the Astracom modem, popular with many QL users. Keith Webb, Astracom designer, has located a suitable CMOS V22/V22bis modem chip. The modem firmware will also be modified to cater for the upgrade, and to eradicate one or two minor bugs.*

## Listing to the printer

New users who would like a print-out of their *SuperBASIC* programs sometimes get puzzled when they find that LLIST doesn't work, and the manual isn't much help. The correct incantation is:

```
OPEN #3, ser1
LIST #3, fred_bas
CLOSE #3
```

– assuming that you have the printer connected to ser1. These statement should be entered in direct mode, of course. You might have to set the baud rate first.

## Wafer-scale integration

In a recent issue of another mag was an ad for a couple of jobs with Anamartic – the avuncular and formerly eponymous Sir Clive Sinclair's company – working on one of his pet projects, wafer-scale integration.

This rather way-out project has a connection with the QL! I recall seeing a photograph of Sir Clive holding a wafer attached to a QL expansion connector. This was presumably intended to be a Sinclair 512K memory expansion unit, or perhaps a solid-state disk.

**John Tororex**


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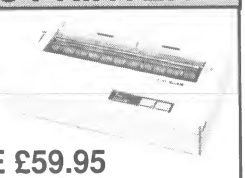

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# BEEB BOX

## Branching out

Is software for the Archimedes really more advanced than that for the Beeb? Does RISCOS make all the difference? Is it worth the cost to upgrade? – and so on. In an effort to answer these questions, I have done some comparative tests on equivalent software for both machines.

*Ancestry* and *Kinship* are both genealogy programs, the former from Minerva for the Arc, and the latter as already commented on in this column from BBCsoft for the Master128 only. Both are similar in operation – not surprising as they are in fact by the same author, David Crow. Both use alternative tree and card views, and allow various printout options. *Kinship* uses standard menus for all operations, whereas *Ancestry* allows you to click with the mouse on radio-type *buttons*. A sideways print option for the entire family tree exists, and here *Ancestry* takes the lead with several different options. Output is one reason for preferring *Ancestry*, and another is a report generator similar to those on database programs. It does allow spooling to disk, which means you can export to word processors and DTP programs. Neither, however, possess anything in the way of file exchange utilities, which is a disappointment. *Ancestry* can include a picture as part of the database, but the way in which it handles them is poor. There is also no way of accessing the rich variety of facilities available under RISCOS, so unless your needs are extensive go for the Master version.

### SuperSID

*SID has spread its wings, and the revamped service now offers up to 5 Mbytes of software and technical documentation. The system is interactive, so users can get hold of support when they need it. There are also electronic magazines for educational users covering everything from DTP to space travel. Access costs are also down to eight pence a minute.*

## Stock-in filler

*Stock Pack* from Topologika is designed to be part of a GCSE course, presumably business studies. It's a simulation that combines aspects of a sales ledger with stock control. The program is well designed in mode 7, with good on-line 'help' and clear manuals. The one query I would raise is conceptual in nature. Do children gain anything from this kind of simulation, given that the methods used are bound to be out of date by the time they could make use of the knowledge?

## Hard facts

If you use database programs regularly, you will be aware of the need for regular backups. However, you may not be aware that even the best backup system has one flaw. Electronic media can never be completely reliable, so for ultimate security make a hard copy onto paper. Use condensed print and one line per record for maximum economy.

**Andrew Brown**

# MSXTRA

## End of the line

At last – I've received my copy of the Konami Software Club magazine. As it's about five months late, the news that it will be the last edition to be published comes as no surprise.

The reason given is that there were too few MSX users in the UK to make the magazine viable. However, the magazine covered titles across all the 8-bit formats, including Konami titles for the Nintendo console too. If the club could have attracted members who used the so-called "major" 8-bit computers, then the magazine might still be published.

If anyone still has not received their copy of the magazine, I suggest you write or phone, as you are due a refund on your subscription – this is explained on an insert that comes with the magazine.

### Ocean's swell

*Ocean has really done a cracking job converting its latest games to the MSX – including Robocop. This game is basically a horizontal shoot-'em-up, with your character fighting his way to the end of the screen. Here he has to rescue a hostage, before he can proceed to the next level. Each stage has something to keep up interest – it isn't all just mindless violence. Graphics are good and the sound effects and music are also well done.*

*In Rambo III you view Rambo from above, and must rescue his colonel from the Communists. This game should hold your interest for some of time. 8 out of 10 for both games, and well done to Ocean.*

## Bargain basement

Notice that if you own a popular 8-bit computer, after a few months you can buy great games at knock-down prices.

Well, good news for the MSX user from Capri Marketing of High Wycombe, Bucks. MSX software starts at only 99p, and the £1.99 section includes titles such as *Master of the Lamps* and *Starquake*.

Not only that, the list has Hisoft's Pascal for £9.95, and Kuma's Forth for only £3.99. Capri Marketing can be found at **24A White Pit Lane, Flackwell Heath, High Wycombe, Bucks**. Tel 06285 31244.

## Huge selection

Capri might have some of the cheapest software around, but for sheer quantity Tavistock Hi-Fi of **21 The Broadway, Bedford**, (0234) 56323, will take some beating.

It's been a while since I last saw its list of MSX software, so it was a pleasant surprise to see that it still has over 170 titles on sale. This includes all the very latest software, games such as *Titanic*, and *Barbarian*. When I asked how well MSX games were selling, and got the reply, "We are selling as many titles now as we were two years ago".

I've used Tavistock Hi-Fi in the past, and found it to be really efficient, with all titles that are in stock being sent by return of post. Phone before you send any cash, though, as some titles are bound to be hard to obtain now.

**Keith Neal**


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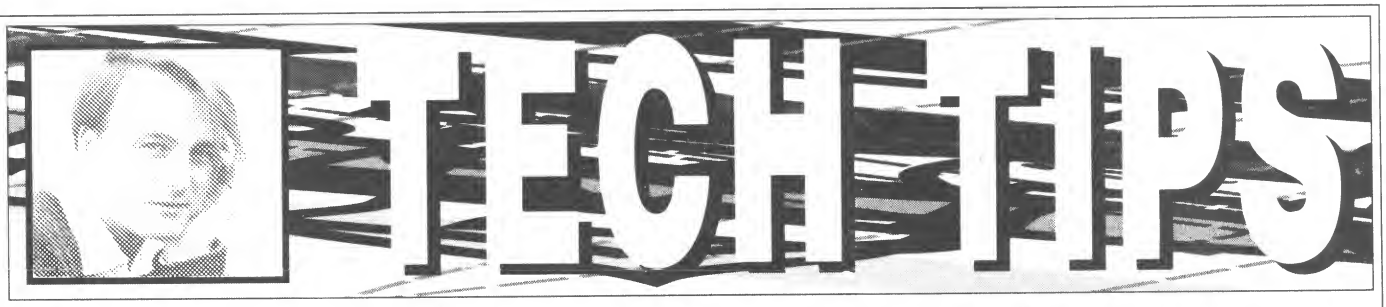



***Problems with your computer?* Express's *Agony* column has the answer. *Write in strictest confidence to Uncle Techtip.***

***Best tips win a freebie – so don't forget to tell us your address and machine***

## HELP!

### Making connections

**I bought a CPC464 with colour monitor several years ago and have used it almost every day since. But after much deliberation would like to use graphics packages and the ST offers better resolution, more colours etc.**

**My question is, is there any way that I can connect my Amstrad colour monitor to my ST? If this is possible, would it be able to display all of the colours available on the ST? If I want to run software intended for the mono monitor will I have to disconnect the Amstard display and use a different monitor or is there some way around this problem? All help greatly appreciated.**

*William Carstairs, Bognor Regis, West Sussex*

• Oh no, not the old Amstrad monitor to ST chestnut. Yes, you can connect the Amstrad colour monitor to the Atari ST and here's how to do it. First, purchase a standard Atari monitor lead (available from several of the mail order suppliers who advertise in *Express*). You must also buy two OA91 diodes (from Maplin), some 300 ohm resistors and an Amstrad six-pin DIN plug. Snip off the Atari DIN plug, bare the wires and solder one of the diodes in line on pins 9 and 12 (horizontal and vertical synch respectively), then join the wires from the two pins together. Solder a resistor to each of the wires from pins 6, 7 and 10 (red, green and blue). Connect the Amstrad DIN plug to the lead using the following configuration:

**Atari pin 7 to Amstrad pin 1**
**Atari pin 6 to Amstrad pin 2**
**Atati pin 10 to Amstrad pin 3**
**Atari pins 9 and 12 (joined) to Amstrad pin 4**
**Atari pin 13 to Amstrad pin 5**

The lead is now complete and will allow your ST to make full use of the Amstrad monitor. All colours will be displayed.

As far as the problem of the ST's different resolutions requiring different monitors is concerned, there's a little utility in the public domain which fools the ST into thinking it has a mono monitor connected. The program is available from any of the PD advertisers in *Express*.

## HELP!

### Programmers' choice

**After owning an Amiga for two years and playing games I have decided that it might be nice to learn some programming. I have decided to plunge straight into machine code as I believe that it is much better for writing games as it is faster and more compact. Could you recommend an assembler package and a good book that is easily understood by a complete novice to programming.**

*Andrew Petal, Kingston, Devon*

• Although machine code is indeed faster and more compact, some of the latest compiled versions of the BASIC language, particularly those intended for games writing, are very fast and compact when compared to the BASICs bundled with the home computers of yesteryear. Mandarin software is about to launch *AMOS* for the Amiga, which is a replacement BASIC for the machine, providing everything necessary (including the speed) for writing good-quality arcade and other games. Anyway, you wanted an assembler, huh? You could do a lot worse than taking a look at the *Metacomco Macro Assembler* from – not surprisingly – Metacomco. The package costs around £70. Contact Metacomco on 0272 428781. As for a book, try and get a copy of *The Amiga Programmer's System Guide* from Abacus. It costs £32.95 and is available from good book stores.

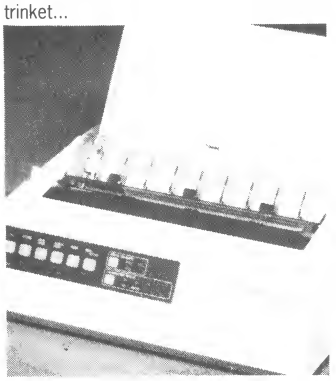
## HELP!

### Printer problems

**I wonder if you could tell me where I could obtain a printer manual for the Oki Microline 192 and the Fujitsu SP3200 letter quality printer. You see, I obtained these printers at an auction. I wish to sell them but I need the manuals, any help you could give me would be much appreciated.**

*Robert Hart, Wimbledon, London*

• Printer manuals, huh? You could try contacting the manufacturers directly which, for a small fee, may be able to provide the necessary documentation. Fujitsu can be called on 01 573 4444 and Oki on 01-742 2001. Alternatively, if the techtippers can help with spare/old manuals, send them in and I'll pass them on and reward with some computerish trinket...



**The Oki Microline printer: Have you got a manual?**

## HELP!

### File facts

**I own a Commodore 64 with *Easy Script* word processor, which up to now I have being using for writing letters and documents whilst at home. At work I use *MS Word* on a PC.**

**I have just bought an Amstrad 1512 with a double drive, a Star LC-10 colour printer and *MS-Word* itself. I have approximately twenty disks of *Easy Script* files which I would dearly love to convert to *MS-Word* files for further work on my new PC at home.**

**Could you please tell me if it is possible to convert *Easy Script* files on the Commodore 64 to *MS-Word* files on the PC, and what hardware/software I need to do this?**

*Adrian Webberly, Crowborough, East Sussex*

• Oh no! Not the old upgrade/what to do with old software and files chestnut. I don't have access to the *Easy Script* manual so I'm afraid my advice may be a little off the mark.

The first thing to do is to determine whether or not your word processor can save files in ACSII format. If this is possible, convert your files to standard ASCII and re-save them. This will rid the files of control codes inserted by *Easy Script* which may confuse *MS-Word*. The next step is to make a serial connection between the CBM64 and the Amstrad. To do this you will require one of the many gadgets on the market which render the non-standard serial port of the C64 to a form usuable as a standard RS-232 ➤

## BUG(S) OF THE WEEK

**I am very interested in trying to win a subscription to my favourite magazine so I've sent a few bugs/tips. Firstly *Kick Off* on the Amiga:**

**1. If a team's two main strikers have both been sent off and that team has to kick off again, no-one from that team restarts the match. This means that the ball is just left on the spot for the opposing team to take.**

**2. If a penalty is awarded just before the end of the half/match, the clock won't stop and so the referee may blow 'time' befiore the penalty can be taken. Therefore a good tip (if the referee hasn't been booking many players) is to foul an opposing player if he is in your penalty area and there isn't much time left.**

**I used to own a rubber-keyed Spectrum and the re-release of *Daley Thompson's Decathlon*. Here are some bugs/tips associated with that:**

**Long jump: Run up to the line slowly and try to land so that Daley's bum is as close to the line as possible. If done correctly, the official will stay still for a while, in the meantime the distance recorder will increase very quickly.**

**High jump: When the bar is at 2.25 metres or more, why jump over it when you can dive under it? Run up to the bar as normal and when you're as close to it as possible tap the fire button quickly and then immediately hold the button down.**

**1500 metres: Don't start running until 500 seconds have elapsed. Start Daley running until he is only a metre or so from the finish then stop. Wait until the clock reaches 999 seconds – after which it resets to 000 – then move Daley over the line for a time even Ben 'acid' Johnson couldn't match!**

*Lindsay Samaraweera, Harrow, Midax*

• Well done, Lindsay, you've just won yourself a sub. If any other techtipper wants one then get writing...

**• Formicomus pedestris**
**This species, the only one of its genus found in central Europe, is remarkable in that its central nervous system is able to control only four out of its six legs at any one time**

connection. Connect the Amstrad and the Commodore 64 together and use communications software running on both machines to transmit the files. Software of this type is widely available in the public domain for both computers. Once you've managed to transfer the files and saved them to DOS disk, it should be a simple matter of loading the documents into *MS-Word* and working on them as you wish. Rather a lot of requirements before you can actually transfer the files I'm afraid, but there you are, the home computers of yesteryear are severely limited (even the comparatively good ones).

• File transfer from the Commodore 64 to the Amstrad 1512 - not quite as easy as it looks!

TIP

## STep by STep

As the owner of an upgraded Atari 520STFM who has recently fitted an NEC double sided drive, I can vouch for Power Computing's statement to Greg Harris (*Express* 37) that the hardest job is taking the case off the machine.

The easiest way to remove the excess plastic from the leads fitted to the machine is by use of either a Stanley knife or a small file.

The socket fitted to my ST has seventeen holes just as the new and old drives both have seventeen pins so I can only assume that Mr. Harris has some sort of rogue drive fitted to his ST, probably fitted during one of the drive shotages experienced by Atari.

If Mr. Harris hasn't yet taken his machine to a repair centre to have the drive fitted yet, then he might like to order a back copy of *Computer Shopper* (September 1988) where on pages 78 and 79 of ST corner, Mark Evans gives step by step instructions on fitting new double sided drives to the ST.

*P Budge, Cheadle, Stoke-on-Trent*

HELP!

## Last chance

**I used to own an Atari 130XE and I had a game called *The Last Starfighter*. This game was taken from the film of the same name and was exactly the same as the coin-op in the film. I got the game from a friend but it was on one of his own tapes so I don't know if it was really released under any company. I now have an Atari ST and would like to know if the game is around would it be released on the ST?**

*Chris Waring, Skelmersdale*

• I'm not aware of any plans to release of *Starfighter* for the ST.

HELP!

## Amiga plus

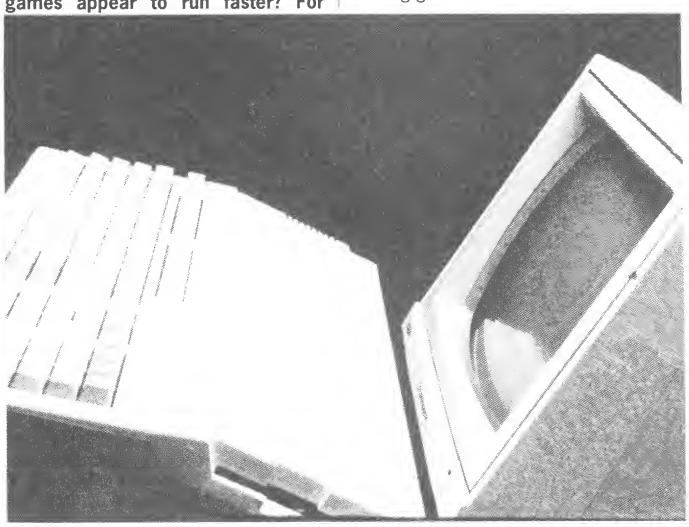
**I own an Amiga A500. Could you tell me if I upgraded the processor from the 68000 to a 68010 or a 68020 or if I expanded the memory from 1/2 meg to 1 or 2 megs would games appear to run faster? For example, would your Ferrari (*don't you mean my Fiat 500? – Unc.*) appear to speed along faster in *Out Run*?**

*S Maudarbocus, Garston, Watford*

• A faster processor would increase the speed of software, increased memory capacity (in most cases) would not.

Installing a faster processor would be a waste of time, quite honestly; in theory your Ferrari would go quicker but in practice you're better off buying a faster machine.

The best answer is just to buy a faster moving game...



• The Amiga A500. Fast, flashy and fun but is its capabilities enough for the majority of users or do they want more?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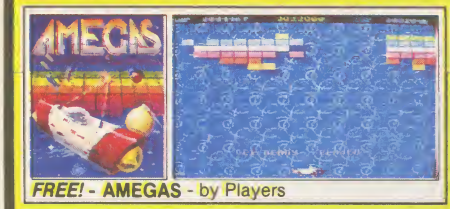


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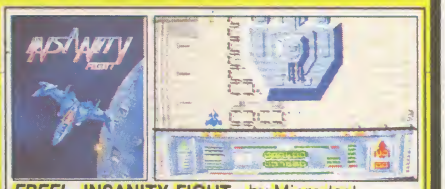


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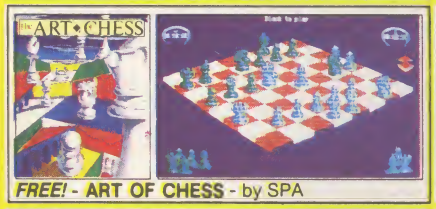


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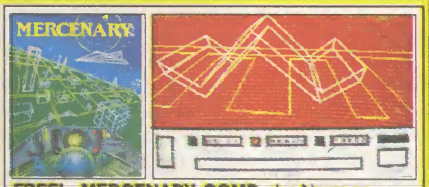


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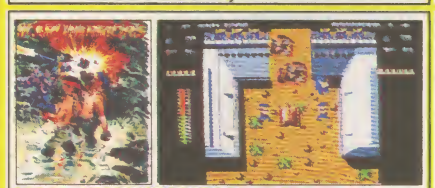

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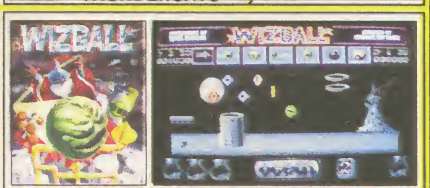


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# "STREET TALK"

By Rik Haynes

**W**elcome to our redesigned games section. As you can see *Gameplay* now offers far more than just reviews and previews. We see it as a complete guide to all aspects of gaming with one unique advantage: it comes out every week. So for tips, news, reviews, previews and comment that's *really* up to date, you'd be a fool to look anywhere else. But enough hype, let's get to business.

• Amiga Indy Jones out next week, but will it whip up a storm?

**The dominant release** over the next few weeks will be US Gold's much-publicised *Indy Jones Last Crusade Action Game*, out next Monday on Spectrum, CPC, C64, ST, Amiga (£9.99 cassette, 14.99 disk and £19.99 16-bit). I wasn't impressed with the pre-production versions of the game, and like the film, it will probably be overshadowed by all the media hype surrounding the new *Batman* movie/game. However, I'll reserve my final judgment on *Indy Action* till I've played the finished game – let's just hope it's better than the awful *Indiana Jones Temple of Doom* game released a couple of years ago.

**Good news for *Star Wars* fans** as Domark is releasing its three *Star Wars* games on a compilation pack – imaginatively called *The Star Wars Trilogy* – early next month on Spectrum, C64, CPC, ST and Amiga (£12.99 cassette, £24.99 16-bit – no price has yet been fixed for 8-bit disk, but it will probably be £17.99). The *Star Wars* games were pretty good coin-op conversions, originally knocking out for £10-£20 each, so the pack offers great value for money. Meanwhile, Domark is releasing its latest Tengen coin-op conversion *APB* on Tuesday 16th for Spectrum, C64, CPC, ST with the Amiga version following a week later. Already previewed in *Express* 34, *APB* is a humorous racing-sim which did quite well in the arcades, although the ST pre-production version doesn't look all that stunning.

• The force will be with you, thanks to the new Star Wars compilation pack

**As usual for this time of year** – the infamous Summer lull – everybody is either queuing at the airport or drinking cool drinks in the shade, 'cause there's not a lot happening out there. Hopefully, things will start to pick up next month, when all the software companies prepare for their September PC Show offensives. By the way, if you go to the show, come and visit the *Express* crew on the Future Publishing stand.

**Mirrorsoft has just released** *The Mission Disks Vol.1* for Spectrum Holobyte's deservedly popular flight-sim, *Falcon*. For £19.99 on ST and Amiga, you effectively get a whole new game, with 12 new missions, new ground details such as factories and power stations, and a Mig 29 to fly against. Don't forget you need the original *Falcon* to use the *Mission Disks*, though. And the good news is Mirrorsoft is planning more *Falcon Mission Disks* in the near future – the bad news is no *Mission Disks* will appear on the PC.

• Taking to the skies: the Falcon Mission

**The best budget game** to pick up this week is the re-released *Rescue on Fractalus* from Mastertronic on Spectrum, C64 and CPC (£2.99 cassette only). Written by innovative US outfit, Lucasfilm Games, *Fractalus* was the first game to incorporate fractal graphics, and includes a brilliant and very startling in-game sequence. It's just a pity Lucasfilm never did ST and Amiga versions.

**Apart from the disclaimer adverts** from manufacturer NEC, all's been quiet on the PC Engine scene of late... but this state of play looks set to change, as some very tasty games are soon to go on-line from the cyberstate Japan, including *Afterburner*, *Altered Beast*, *Darius*, *Operation Wolf*, *Out Run*, *P-Type* (*R-Type III*), *Shinobi* and *Thunderblade*. More details as soon as I've played 'em.

**I was disappointed** to see Infogrames' new budget label Pocketsoft will be re-releasing ST games on double-sided disks – thus making them incompatible with early versions of the ST. Smart move, Infogrames!

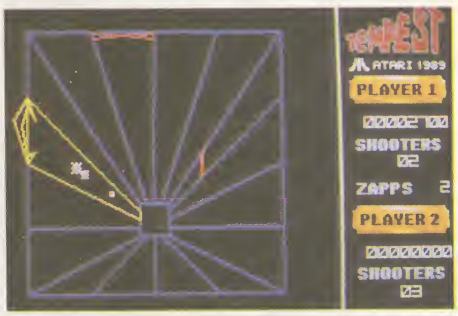
# FIRST PEEK

● An exclusive early look at the new 16-bit version of Ace. The classic 8-bit flight-sim-cum-shoot-'em-up from Artronic is finally going to make it onto the ST and Amiga this Christmas. Apart from audio-visual improvements over its Spectrum, C64 and CPC predecessors, 16-bit Ace includes the new European Stealth Fighter and a Falkland Island campaign, and should take off for £20.

# MINI-REVIEW

## TEMPEST

**Atari • ST • £14.99dk • No other versions planned.**




The original Tempest coin-op was one of the most impressive and addictive arcade games of '82, with fast vector visuals and insidious gameplay. The ST version of '89 lacks all the charm of its illustrious parent. The graphics are spartan, the audio is pathetic and the great in-game sequences from the coin-op have disappeared completely. The only thing going for it is price – but £15 is starting to become the norm for ST games now anyway. A great opportunity totally missed.

# Play back

*YOUR views on the latest software – call 0225 444439*

*"Kick Off from Anco is the greatest bit of programming since Channel 4's The Tube on a Friday evening."*
**Mike Barratt, Sheffield**

*"Flickery sprites, full of bugs and uncontrollable. I wouldn't waste my time on Kick Off."*
**Roland Tow, Weymouth**

*WHY has Robocop been at number 1 in the Gallup charts for so long? The Commodore 64 version does nothing for me."*
**Tom Black, London**

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# ONE-LINERS ● ONE-LINERS

● Codemasters has released its first BBC game this week with *Fruit Machine Simulator*, which is also available for Atari 8-bit decks (£2.99 cassette only).

● Computer buff *Populous* fans can now enjoy a new feature in the *Populous Promised Lands Data-Disk*, thanks to a new Bit Plains landscape with ZX81 and Cray computer settlements and lands made out of computer print-out paper.

● Lucky Sega Console gamesters will be able to play the excellent Galaxy Force II shoot'em-up next month... owners of "lesser" machines will have to wait till Christmas.

● Audiogenic's biggie release, *Lone Wolf*, has been delayed till late September because of "development hassles".

● Footie experts can rid pre-season boredom with Challenge Software's *Treble Champions* football strategy game on Spectrum, C64 and CPC (£9.95 cassette, £13.95 CPC disk). The ST and Amiga versions will be out in October.

● After a wait of almost eighteen months, *Predator* is finally going to make it onto the Amiga this month.

● *Emlyn Hughes* football-sim is due out on ST and Amiga (£19.99) in October...

● ...and the trivia game, *Emlyn Hughes Arcade Quiz*, should be out on ST and Amiga next month, with Spectrum, C64 and CPC versions following in November (no prices as yet).

# TAME GAME

## CHEATING AT SILKWORM

**Great tips on the classic from Virgin Games by DAN MARCHANT of Random Access – and he should know 'cos RA programmed the game.**

**AMIGA VERSIONS** ● Amazingly, there are TWO versions of this great little horizontally-scrolling shoot-'em-up being sold on the Amiga! The only difference between them is that they have different cheat modes, because one idiotic computer magazine printed the cheat before *Silkworm* was even released.

**Version 1**: Hold down the HELP key and keep it pressed while pressing fire on the joystick to start the game. You now have infinite lives and can move through the levels by pressing the numeric keys 1 to 0 and the minus key.

**Version 2**: If you have the latest version, then attempting the above will result in a message saying 'Congratulations you have found the cheat mode... unfortunately it's been ZZAPPED'. If this happens, go to the control selection screen and type 'SCRAP 28'. You now have the same cheat mode as Version 1.

**ST VERSION** ● "The ST version has a 'cheese' mode instead of a cheat mode. Press 'C' when the high score table is displayed and you will get to meet Fat Mouse. To enter cheese mode, start the game and type 'GORGONZOLA'. You will get the 'Cheese mode activated' message. Just start playing again and you can increase the number of credits you have by pressing 'C'. In addition check what has happened to the on-screen text and watch out when the baddies start dropping the grey bouncing bombs..." ●

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- **SILKWORM**
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EVERYBODY who gets a tip, cheat, poke or bug published wins a prize! So what are you waiting for?

**P.S.** We're also interested in **high score claims** on these titles – and we'll **print** the highest, *provided* you also give us THREE TIPS on how you achieved the score! Write to the address above.

**Forget the sales level, feel the quality. These are, in our opinion, the best titles of the last two months.**

HIT LIST TOP 5 GAMES

### 1. KICK OFF

**Anco – ST, Amiga**
Superlative football-sim. Infuriatingly frustrating, remarkably realistic and frighteningly addictive. Probably Game of the Year. An essential purchase.

### 2. POPULOUS

**Electronic Arts – ST, Amiga**
Original in both gameplay and visuals. An arcade strategy game in which you control the development of a world. Another contender for Game of the Year.

### 3. SILKWORM

**Virgin Games – Spectrum, C64, CPC, ST, Amiga**
Brilliant horizontally-scrolling shoot-'em-up with immense playability and quality audio-visuals. Virgin Games is back with a vengeance.

### 4. NEW ZEALAND STORY

**Ocean – Spectrum, C64, CPC, ST, Amiga**
Really cute and cuddly. Accurate and playable conversion of one of the hottest coin-ops around at the moment. Ocean does it again!

### 5. CARRIER COMMAND

**Rainbird – Spectrum, ST, Amiga**
It's been a long wait, but *CC* has finally arrived on the Spectrum. A great balance between strategy, simulation and arcade action.

# THE NEW ZEALAND STORY

**From: Ocean • Reviewed: Amiga Version**

GAME of the WEEK

**Question: How can Ocean top the run away success of *Robocop*? Answer: Easy, by converting the hottest coin-op in the arcades at the moment...**

**GAMEPLAY** ● *The New Zealand Story* is a Taito coin-op with you controlling Tiki the Kiwi through 20 levels of multi-directional, platform perfection in a mission to rescue your kidnapped friends. On the way you'll meet flying teddy bears, rabbits and bats while negotiating traps and hazards before your time runs out.

• Todays the day, the teddy bears have their heads kicked

**GRAPHICS AND SOUND** ● *NZ*'s visuals are kept simple and straightforward. But the sprites are so cute they're near nauseating. *NZ* is full of great little touches, like Tiki donning some sub-aqua gear when he enters water and teddy bears wearing radical sunglasses. There are plenty of backdrop objects to discover as well. The endless mind-numbingly sugar-sweet soundtrack does the job, and is backed up with a few spot jingles, in there to keep the interest up.

**OTHER VERSIONS** ● The ST version has a slightly smaller play area, but apart from that, it's pretty much the same as Amiga *NZ*. We haven't seen the other versions yet.

| VERSION | PRICE/FORMAT | DUE OUT |
|---|---|---|
| Spec | £8.99cs, £14.99dk | 1st August |
| C64 | £9.99cs, £14.99dk | 1st August |
| CPC | £9.99cs, £14.99dk | 1st August |
| ST | £19.99dk | Now |
| Amiga | £24.99dk | Now |
| PC | No version planned | |

• This place is a dive

**VERDICT** ★★★★★

*NZ* closely resembles its arcade parent, in fact it's one of the best coin-op conversions we've seen this year, although the original wasn't by any means audio-visually outstanding. Just like Taito's earlier cutie platform game, *Bubble Bobble*, *NZ*'s strengths lie in its gameplay's huge pulling power in terms of playability and addictiveness. Ocean may just have found a successor to *Robocop* after all...

• Nothing's gonna stop you from saving your mate!

## WHAT A CHOICE!

The software development company responsible for the Amiga version of *The New Zealand Story*, Choice Software, has been in the software biz for about five years. In that time, it has written games like *Rambo* (CPC/Ocean), *Platoon* (Spectrum, CPC, ST, Amiga/Ocean), *Summer Games* (Spectrum, CPC/US Gold), *Final Assault* (Spectrum/US Gold) and *Daley Thompson's Olympic Challenge* (ST, Amiga/Ocean). Choice started work on *The New Zealand Story* back in February, but had to work from a video of the coin-op for six weeks because Ocean couldn't get hold of an arcade machine due to its immense popularity. Amiga *NZ* was written using Hisoft's *Devpac2* Assembler on the ST, and then ported across to the Amiga. The hardest parts to write in the game were the sprite and screen handling routines. When we called Choice, it was just putting the finishing touches to the Spectrum version of *NZ*, which is reported to be looking good. Read *Gameplay* next week to see whether we agree.

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| Mega ST2 with mono monitor | £849.00 |
| SM124 mono monitor | £119.00 |
| SC1224 colour monitor | £279.00 |
| Philips 15" FST Teletext TV/monitor model 1185, full rem/ctrl, c/w cable | £269.00 |
| Philips CM8833 14" colour monitor c/w ST or Amiga lead | £229.00 |
| Philips 8CM852 as above, higher resolution (0.39mm dot pitch) | £259.00 |

## commodore 64 accessories

| | |
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| Oceanic OC-118 64/128 disk drive for 64/128 with free GEOS software | £129.95 |
| Oceanic OC-118 as above, with Freeze Machine cartridge | £149.95 |
| Freeze Machine backup cartridge, with integral reset button | £ 28.95 |
| LC-10 commodore 64/128 ready printer inc. 2 extra black ribbons free | £189.00 |
| LC-10 7-colour version of above printer inc. 2 extra black ribbons | £239.00 |

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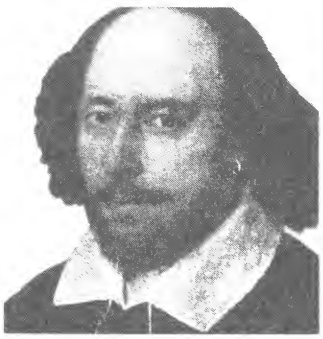

## Ten Shakespeare quotes about computing

10 Every one fault seeming monstrous till his fellow fault came to match it
(As You Like It, Act III, Scene ii, line 37)
*On Amstrad hard disks*
20 They have a plentiful lack of wit
(Hamlet II ii 204)
*On Codemasters Press releases*
30 God has given you one face, and you make yourselves another
(Hamlet III i 150)
*On Atari's PR department*
40 A tale told by an idiot, full of sound and fury, signifying nothing
(Macbeth V v 17)
*On the success of the 'Rambo' game*
50 Confusion now had made his masterpiece
(Macbeth II iii 72)
*On the vagueness of the Copyright Law that came into force last Tuesday*
60 You pay a great deal too dear for what's given freely
(Winter's Tale I i 18)
*On the PD suppliers that charge you £3 a disk*
70 The very rats instinctively have quit it
(The Tempest I ii 47)
*On computer magazines about to bite the dust*
80 The most unkindest cut of all
(Julius Caesar III ii 188)
*On Government cuts that threaten teaching of computing in schools*
90 Who lined himself with hope, eating the air on promise of supply
(Henry IV Part I I ii 210)
*On dodgy mail order outfits*
100 She speaks, yet she says nothing
(Romeo and Juliet II ii 12)
*On software houses' PR girlies trying to describe a game*

## Ten puns that have been done to death in computing magazines

10 C for yourself
20 Virgin on the ridiculous
30 From little Acorns...
40 Taking the RISC
50 Sugar's bitter pill
60 This is the modem world
70 Comms to us all
80 In at the DTP end
90 Console yourself
100 Disk diskovery

## Ten pointless facts about IBM

10 It is called 'Big Blue' after the corporate colour. Most of the employees wear blue suits
20 The computer HAL in the film 2001: A Space Odyssey got its name from IBM. Each letter in HAL is the one in the alphabet before the corresponding one in IBM
30 IBM UK is the country's sixth largest exporter
40 IBM is said to stand by employees as variously I've Been Moved, I'll Break Marriages and It's Better Manually
50 The company song 'Ever Onward IBM' is no longer sung in the mornings but there is a company songbook in the US with hits such as 'I'm selling IBM' to the tune of 'I'm singing in the rain'
60 It was formed as the Computing Tabulating Recording Corporation in 1914 and became IBM 10 years later
70 An acronym used all the time in IBM in America is the Statement Of Direction, or SOD, where the word has no untoward connotations
80 If IBM was a country it would have the eighth largest GNP in the world
90 'XT' stands for 'Xtended Technology'
100 In most countries IBM sites are 'dry' – no alcohol is allowed because of founder Thomas Watson's strict Quaker background and expenses are severely restricted on alcohol drinks

## Ten games that got into trouble

10 Chernobyl
*WH Smith pulled it from their shelves because they thought it was offensive – after US Gold had renamed an existing title in the wake of the disaster in Russia*
20 Jack the Ripper
*Universally condemned for its scenes of utter sickness and gratuitous violence*
30 Skweek
*WH Smiths pulled it from their shelves because the central character utters obscene phrases – these had been put in as a joke and accidentally made it to the master copy for duplication*
40 Last Ninja II
*WH Smiths pulled it from their shelves because ithe packaging contained a shuriken pointed star as used by martial arts protagonists*
50 Game Over
*Ocean had to redesign the packaging because the package showed too much of the model's right nipple*
60 Sidewinder
*The game was fine but an illegal cracked copy was circulated in which the player shot down sprites representing racial minorities*
70 Katakis
*US Gold's game was just about to go on sale when Activision slapped a writ on the company saying it was too much like their own forthcoming R-Type. The game reappeared slightly modified after Christmas as Denaris*
80 Raid over Moscow
*Provoked CND demos outside US Gold's offices*
90 Race Against Time
*The Jesse Owen foundation objected to the picture of the American athlete on the packaging of this charity title. The replacement, Carl Lewis, had to be pulled when his agents objected to the footwear he had in the picture – it was not the one he was currently sponsoring. The game stiffed.*
100 Kids Play
*Another charity compilation, delayed when Ariolasoft claimed one of the games had gone on without their consent – delays probably cost thousands of sales*

## Ten more computing terms that would be used for double entendres in low-budget ITV sitcoms

10 dongle
20 dump
30 floppies
40 gender changer
50 mouse balls
60 spreadsheets
70 TOS
80 VDU
90 What You See Is What You Get
100 WIMP

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| Wizball | Ocean | £19.95 |
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| Zynaps | Hewson Consultants | £19.99 |

### SPORTS SIMULATIONS

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| Eddie Edwards Super Ski | Elite | £19.95 |
| Seconds Out | Tynesoft | £19.95 |
| Summer Olympiad '88 | Tynesoft | £19.95 |

### PRODUCTIVITY SOFTWARE

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| Organiser | Triangle Publishing | £49.95 |

### JOYSTICK

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| Atari CX40 Joystick | Atari Corp | £4.99 |

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**£399** INCLUDING VAT

With SM124 mono monitor: £498 INC VAT  With SC1224 colour monitor: £698 INC VAT

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**£499** INCLUDING VAT

With SM124 mono monitor: £598 INC VAT

With SC1224 colour monitor: £798 INC VAT

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The MEGA ST computers are styled as as lightweight keyboard with a separate CPU, connected by a coiled telephone style cable. There are two versions of the MEGA ST, one with 2Mbytes of RAM and the other with 4Mbytes. Each version has a 1Mbyte double sided disk drive built-in to the CPU unit. The MEGA ST's do not come with modulator built-in and must therefore be used with a monitor. With every MEGA ST purchased, we will add the 'Professional Pack' software (worth £384.83) detailed above, plus the Silica ST Starter Kit (worth over £200) both Free Of Charge. Return the coupon for further details.

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**£899** INC VAT
+mono monitor=£998
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# ATARI ST

## ST COMPUTERS

The range of Atari ST computers offers something for everyone. From the games enthusiast who wants the challenge of the very best in arcade action, to the businessman who wants to make financial forecasts or faultless presentations. The ST offers high quality graphics, sound and speed for the gamer, whilst providing a fast, user friendly and affordable solution to business. The ST is now firmly established in the home environment and boasts a wealth of users in education, local government, television, and a variety of different businesses. Software for the range stretches to cover applications as diverse as ENTERTAINMENT, ACCOUNTS, ART, COMMUNICATIONS, COMPUTER AIDED DESIGN, DATABASES, DESKTOP PUBLISHING, EDUCATION, MUSIC, PROGRAMMING, SPREADSHEETS, WORD PROCESSING and more. For a full list of the software available, as well as details of the ST range, complete and return the coupon below.

*All prices correct at the time of going to press. E&OE.*

# 520ST-FM EXPLORER PACK

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The value for money offered by the Atari ST range is reflected in the Explorer Pack featuring the 520ST-FM computer with 512K RAM. The 520ST-FM computer now comes with a built-in 1 Mb double sided disk drive as well as a free mouse controller and a built-in TV modulator. The new 520ST-FM Explorer Pack includes the 520ST-FM computer, the arcade game Ranarama, a tutorial program and some useful desktop accessories. In addition, if you buy the Explorer Pack from Silica, we will give you the Silica ST Starter Kit worth over £200, FREE OF CHARGE. Return the coupon for details of our Starter Kit and of the full ST range.

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Before you decide when to buy your new Atari ST computer, we suggest you consider very carefully WHERE you buy it. There are MANY companies who can offer you a computer, a few peripherals and the top ten selling titles. There are FEWER companies who can offer a wide range of products for your computer and expert advice and help when you need it. There is ONLY ONE company who can provide the largest range of Atari ST related products in the UK, a full time Atari ST specialist technical helpline and in-depth after sales support, including free newsletters and brochures delivered to your door for as long as you require after you purchase your computer. That one company is Silica Shop. We have been established in the home computer field for ten years with an annual turnover in excess of £8 million and can now claim to meet our customers requirements with an accuracy and understanding which is second to none. But don't just take our word for it. Complete and return the coupon below for our latest literature and begin to experience the Silica Shop specialist Atari service.

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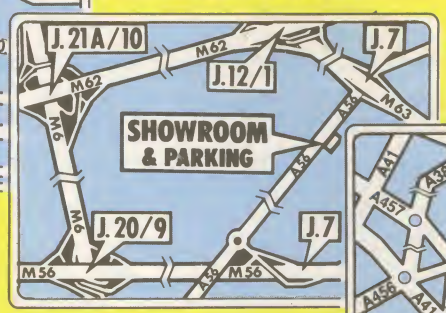


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